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STEAM vs. DIESEL ON THE KATY

VOLUME 7, NUMBER 2 MARCH 1978 PDC $2.50

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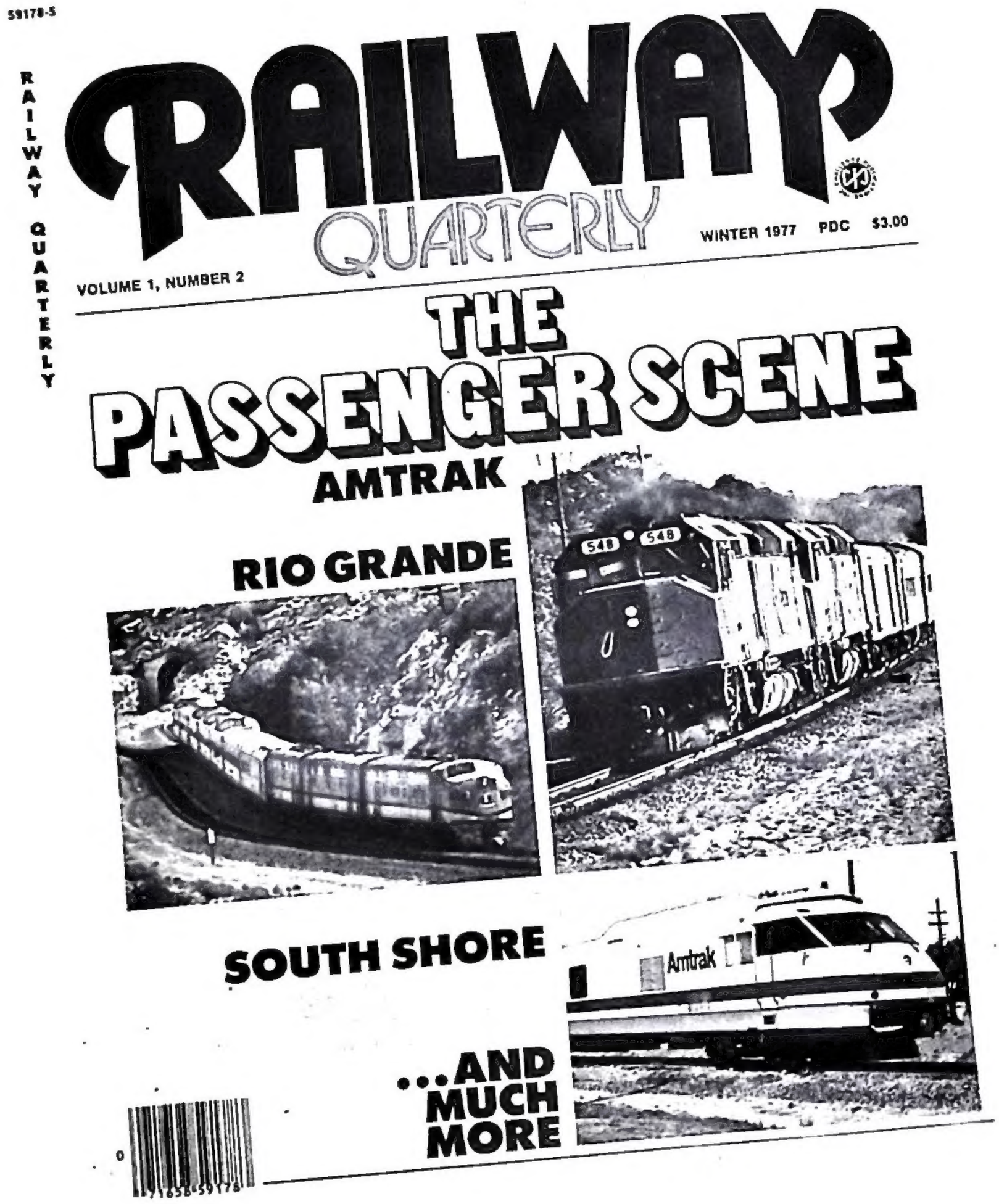

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RAIL CLASSICS

MARCH 1978
VOLUME 7, NUMBER 2

FEATURES

THE DAY STEAM LOST ..... Sapp/Hofsommer 8
The Katy's decision to switch to diesels

ELECTRIFYING MUSEUM PIECE 14
Milwaukee's E-50 electric locomotive is saved

SAGUAROS, SEMAPHORES AND SWITCHBACKS ..... Gary G. Allen 16
A study of Southern Pacific's route through Arizona

SAIM'S STEAMERS ..... Ron Ziel 38
American and Japanese built power is still in service

CLUB CARS OF THE LIMITED ..... Ron Palmquist 48
The Northern Pacific's observations are alive and well

DISTANCE ISN'T EVERYTHING ..... Ernest H. Robl 58
The three mile Atlantic & Western keeps customers happy

MR. EDWARDS' RAILBUSES ..... Ernest H. Robl 68
A small company that had worldwide sales . . . for a bit

THE PCC TROLLEY ..... Van Wilkins 70
As in the case of diesels, they don't all look alike

DEPARTMENTS

Rail Mail 4
On the Rails 6
Photo Gallery 26
What's Happening 32
Scanner Talk 78
Train Titles 79
Derail 82

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American Cancer Society

This space contributed by the publisher as a public service.

RAIL MAIL

FCP'S HOMEBUILT DIESEL

Just received your November issue of *Rail Classics* and spotted William D. Middleton's photo of FCP Train #4. I first saw this home built unit back in May of 1969 and in repeat trips to the FCP I never saw it again and wondered what became of it. Well, Middleton's photo shows it was still active at the end of 1975. The N de M shopmen at San Luis Potosi built this unit from wreck parts and one other very similar unit, as well as four other home builts each different. These home builts were some of the many fascinating variations to be found south of the border. I've been trying to get down there as often as I can and on my last trip in Northern Mexico I found the progress of standardization moving in all too fast.

Don Wallworth
Ho-Ho-Kus, New Jersey

Don Wallworth

SP&S ON LONG ISLAND

As a P.S. to Don Sims' story on SP&S's Alco's, attached is a list of Long Island Railroad power that came from SP&S. All are in service as power units and we expect to keep them in service for many years. Some may be re-engined with Detroit Deisels in the near future.

The Pacific's loss is the Atlantic's gain.

LIRR #611, formerly SP&S FA-1 #857
LIRR #612, formerly SP&S FA-1 #856
LIRR #613, formerly SP&S FA-1 #866
LIRR #614, formerly SP&S FA-1 #858
LIRR #615, formerly SP&S FA-1 #864
LIRR #616, formerly SP&S FA-1 #860

F. A. Field
Mechanical Engineer
Long Island Railroad

UTTER POETRY

I have just received the November, 1977, issue of *Rail Classics*. As usual, the magazine has varied content and absorbing stories. I am particularly wild over the photo on page 40 which shows a Japanese steam locomotive crossing a bridge at twilight . . . utter poetry!!!

I am also enraptured over the photo on page 74, by Bill Rettbergh, which shows the Baltimore & Ohio engine termnial at Grafton, West Virginia, at sunset. Such a panorama of old-time architecture and varied motive power . . . good, good stuff!!! Twilight and trains seem made for each other.

John Uckley
Monroe, Michigan

MORE ON PHILLY'S TROLLEYS

I enjoyed the article "Philadelphia In A Day" by Van Wilkins that appeared in the May 1977 issue of *Rail Classics*. It was well written, informative, and helped me greatly with my own trip to Philadelphia. I do have a few additions and corrections, however.

Base fare on SEPTA city lines is now 45 cents, 50 cents on the Red Arrow division. The Electroliners (sorry, Liberty Liners) have been in storage since the transit strike last spring due to the extra men needed to operate them (all other Red Arrow cars are one-man).

Regretfully, I disagree with Mr. Wilkins' criticism of the Broad Street Line. Perhaps a daily commuter would view the line differently, but I think it to be well worth the time of any fan interested in traction. Armed with a tripod and high-speed film, photos are definitely feasible as the station's no more dimly lit than subway stations in general. With the retirement of Chicago Transit Authority's 4000 series cars, the Broad Street cars are possibly the oldest rapid transit cars in daily service in North America with

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the exception of Red Arrow's 160 series cars. They are prime candidates for retirement and as they are equipped for third-rail current collection only, they are not likely to be preserved by any trolley museum.

Carl Kay
Linton, Indiana

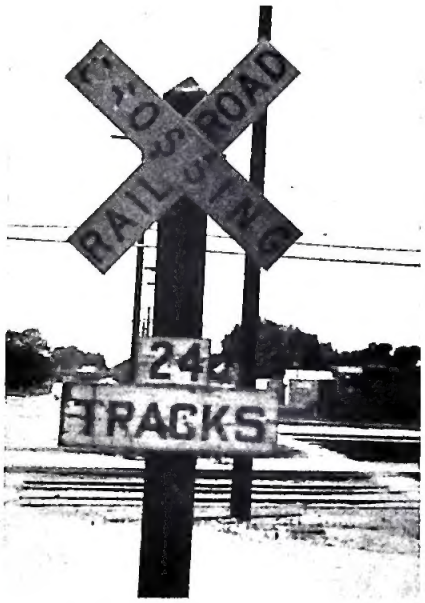
IS THIS A RECORD?

Enclosed photo I took a half-dozen blocks north of the Union Pacific Depot in Salt Lake City in August showing 24 tracks motorists may cross.

Excellent for testing out your shock absorbers. I think it is the area used 30 years ago for cleaning passenger coaches and making up passenger trains.

Does anyone else know of a location having more than 24 tracks with a paved asphalt street across it?

R. R. Miller
Burlingame, Calif.



R. R. Miller

CHARLES DARWIN VS ALCO

After reading Don Sims' work concerning the Alco cabs on the SP&S (RC, Nov., pg. 13), it had me thinking about Charles Darwin's theory of "survival of the fittest."

For instance . . . "A shapeless, sooty, black cloud on a western horizon . . . Alco's very discordant voice —the builder's unwanted trademark." The Alco FA got 1600 hp in a turbocharged V-12 model 244 engine, yet in dependability it couldn't hold a candle to EMD's 567 engine. Why? Alco could never fully eliminate poor oil consumption and weak camshafts because copper was rationed (1945) and the War Production Board gave EMD the say-so in diesel building.

For instance . . . For a 2250 hp A1A-A1a E-8, EMD used two V-12's; vs Alco's single 244 V-16 to do the same. Alco built the only American diesel hydraulics, for Southern Pacific, with 4300 hp, six anxles and a West German transmission.

AC/DC transmissions? Alco had it first. Built in 1965 in the form of Seaboard Coast Lines' #2210, the Century 630 with 3000 hp and Alco's AC/DC drive system. The final punch Alco knocked into EMD was in December 1967; the Century 636. 3000 hp in a four cycle 251 V-16 vs EMD's 20 cylinder 645 to do the same in the SD45.

Alas, on October 20, 1969, Alco called it quits. Darwin was right. Only the strong survive.

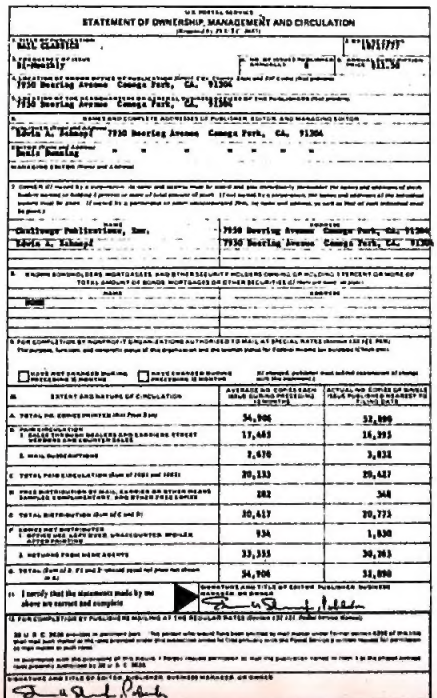
Steve Copley
Newton, Alabama

Lt. A. D. Saleker

ANOTHER BICENTENNIAL UNIT?

There is still some "power" around in bicentennial dress. Please note current automobile license plates "AMTRAK" issued by the state of Maryland to ENS David Warner, USN of Bethesda, Maryland.

Lt. A. D. Saleker, USN
Orlando, Florida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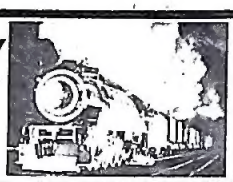

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ON THE RAILS

By Ed Stauss

Automatic Car Identification seemed like a great idea ten years ago when the AAR approved the plan to put those plates with color-coded horizontal stripes on the nation's fleet of rail cars. Trackside scanners were supposed to be able to identify cars as they slowly passed by on the way through a classification yard. The information would then be used in computers to automatically keep track of shipments.

Now the industry is thinking very seriously about dropping the ACI system. Most roads are not using ACI, either because they never cared to try it in the first place or because they did and couldn't make it work. Too many cars somehow got mis-labeled and correctly-labeled cars were often mis-read. In the end it was lack of coast-to-coast dedication to make the system work that did it in. ACI's greatest success was in the Chicago area where all roads cooperated intensively.

* * *

There could be a lot of coal hauled by many of our large railroads if President Carter's energy program is adopted. The government's General Accounting Office has estimated that U.S. railroads could spend over $5 billion to buy hopper cars and prepare yards, facilities and right-of-way for the job. On the other hand, much of the coal may be transported in slurry pipelines or maybe coal will present so many ecology and labor problems that the coal may just stay in the ground. Right now the uncertainty has placed most railroad coal planning on slow order.

* * *

Santa Fe is using a radar speed detector similar to those used by your friendly local sheriff to measure the speed of cars rolling down the humps in classification yards. The desired impact speed is anything under four miles per hour. Object: reducing freight loss and damage.

* * *

The Alaska Railroad is expanding its routes within Alaska and is seriously studying a connection with Canadian lines, also expanding, which would tie into the lower 48. Canada's White Pass and Yukon, to be converted to standard gauge, would bridge between the ARR and British Columbia Railway to complete the connection. Study will take about two years.

* * *

Southern Pacific operates nearly 8,000 miles of microwave communication links along their right-of-way. Cheaper and more reliable than phone lines, microwave radio channels are now in use or planned by more than twenty railroads.

* * *

Union Pacific is experimenting with color television for a semi-automatic car-identification system. Using video recorders, UP can still-frame any car just as in sports "instant replays" to study the reporting marks.

* * *

Conrail will deliver Schlitz from the new Radisson, New York brewery in 190 special 62.5-foot insulated beer cars. Insulation is intended to keep beer from freezing in cold weather and to reduce the range of temperature which could ruin taste.

* * *

The "Little Rock" is an attempt to improve service and efficiency with local control of a small segment of the Chicago, Rock Island & Pacific Railroad. Over 400 miles of track between Little Rock, Arkansas and Eunice, Louisiana will operate independently with their own dedicated fleet of 23 locomotives. If the Little Rock turns in a profit, this could start a trend toward reverse mergers.

* * *

Fast delivery of steel products will be provided by a new Conrail express train which will leave Pittsburgh late in the day Tuesdays through Saturdays for arrival at Detroit in time to have cars spotted at unloading docks the second morning. The train starts at Allenport, Pa., with cars from steel mills in the Monongahela area, stops at 30th Street in Pittsburgh for additional cars including those from the Union Railroad, stops again at Scully, Pa. for interchange from the Pittsburgh, Chartiers and Youghiogheny Railway and Conrail branches and stops for the fourth time at Mingo Junction, Ohio, for steel from Wierton, West Virginia. From there it's nearly non-stop to Detroit.

* * *

A small railroad serving Detroit, the Grand Trunk Western, is objecting to the ICC that another small Detroit railroad, the Detroit, Toledo & Ironton would have an unfair competitive advantage if it was jointly purchased by the Chessie System and Norfolk & Western. The two rail giants have offered $23.6 million to buy DT&I. John H. Burdakin, GTW president, claims, ". . . the long-range consequences of such a sale as potentially and seriously detrimental to GTW . . . and will adversely affect the quality of service we render to the automotive industry and others who are dependent on GTW rail service."

* * *

The first major shop to be built by Conrail will be at Macedonia, Ohio, eighteen miles southwest of Cleveland. The $2 million facility, replacing an inefficient outdoor operation, will repair the 3500 freight cars used on the Cleveland-Youngstown-Pittsburgh main line.

* * *

The photo of Amtrak's Turbo at Ann Arbor, Michigan was miscredited in the November, 1977 issue of *Rail Classics* on page 24 and is actually the work of John Uckley. Our apologies, John.

* * *

AMWORDS . . .

The Chicago-Florida "Floridian" which Amtrak board member Joseph MacDonald called ". . . the most mismanaged, misoperated train in the system," was discontinued effective January 19, 1978 by unanimous vote of the board. During its six years of operation, the bad-news train was rescheduled nineteen times, made national headlines with several derailments, and was frequently rerouted as it picked its way gingerly over deteriorating Penn Central routes in Indiana.

Among the cities left without passenger service by the discontinuance are Louisville, Kentucky, Nashville, Tennessee and Montgomery, Alabama.

The board has decided to consider restoring the train at some future date on a new route south of Nashville which would bring the first Amtrak service to Chattanooga and would continue through Atlanta, Savannah and Jacksonville.

* * *

A new Amtrak station has opened adjacent to the existing San Francisco BART station in Richmond, Calif., designed for convenient passenger interchange between the two rail services and local bus lines. Amtrak trains using the station are the Coast Starlight, San Joaquin and San Francisco Zephyr.

* * *

Sixteen Metroliners will be improved by Amtrak with new interior carpeting and upholstery and overhaul of trucks, traction motors, air conditioning, brakes, etc. This is the first of a program which may extend to 57 of the fleet which has not been overhauled since introduction to service in 1969. Four cars were given a similar treatment in 1974 and have achieved a 40 percent reduction in maintenance cost.

* * *

Nearly half of Amtrak's SDP40F fleet is being modified into four-axle units similar to the F40PH's which have performed very satisfactorily. To be known as the F40PH(R), they will include new frames, bodies, trucks and fuel tanks while the engines, traction motors, brakes, cab signals and crew equipment will be renovated and reused. The rebuilt locos will have head-end power for compatibility with the new Amfleet and Superliner cars.

* * *

The California Department of Transportation wants to purchase one or more small California railroads, the largest of which is the San Diego & Arizona Eastern Railway which owner Southern Pacific has up for abandonment.

Using the name Caltrak, the department is currently sponsoring some Amtrak trains in California including two of the Los Angeles-San Diego runs. Will the name of the department's freight operation be Calrail?

* * *

The Gambler's Special is a tour package now operated by Amtrak every Saturday and Sunday from Los Angeles. Horse lovers will board the regular Amtrak "San Diegan" which departs Los Angeles at 7:30 a.m. and ride to San Diego where they will transfer to a Mexicoach bus for a ride across the border to the Agua Caliente race track in Tijuana, Mexico. Those who lose all their money on the horses will be happy to know the return trip is included in the package.

PHOTOS WANTED

Anything pertaining to steam operations in Moultrie, Georgia; Georgia Northern RR, Georgia & Florida RR, and Atlantic Coast Line. Black and white prints, negatives, or color slides. Write to:

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THE DAY STEAM LOST

THE KATY'S DECISION FOR INTERNAL COMBUSTION

By Leon H. Sapp and Don L. Hofsommer

On V-J Day, 1945, the motive power roster of the Missouri-Kansas-Texas Railroad (Katy) was as lean as its famous 4-4-0 steam locomotives. The company had not had the inclination in the 1920s—and in the 1930s it had not had the ability—to acquire modern steam power. Consequently, its largest locomotives, and its newest (1923), were Lima-built 2-8-2s. Traffic resulting from World War II put great stress on the road's aging power fleet, but Katy boilermakers and machinists met the challenge by turning in near-epoch performances as they urged every last mile out of the venerable machines.

Now, with the conflict over, however, there was no choice for Katy's management: the company had to have new locomotives. Correspondingly, M-K-T officials arranged to test a new F3 diesel electric locomotive from General Motors' Electro-Motive Division (EMD) during January, 1946. Although these tests were staged over Katy's entire main line from St. Louis to Houston, the focal point was on the Choctaw and Cherokee Division's in Oklahoma. There the diesels performed so superbly that M-K-T management made the fateful decision: internal combustion would replace steam on the Katy.

Katy officials knew that several roads, large and small, had already tested multiple unit diesel locomotives with considerable success. They knew, for instance, that the Santa Fe Railway was impressed with the fleet of FTs which it had acquired as World War Two began. And they knew also that Lou Sprague of the Minneapolis & St. Louis was so pleased with that road's brace of three-unit FTs that he had ordered total dieselization there. Yet Katy management was curiously unswayed by this knowledge. The diesel, they maintained, would have to undergo tests on the "home road."

It was not that Katy officials were blindly devoted to steam. On the contrary, while certain other roads continued to develop and purchase modern steam power, Katy management gave little if any consideration to the acquisition of it in the postwar era. For Katy, as for most roads, the problem was complex. Modern steam locomotives in the form of 2-8-4s or 4-8-4s were available in 1946 for about half the cost of three-unit, 4500 horsepower diesel locomotives. The difficulty for Katy, however, was not restricted to main line power; its entire roster was elderly.

To acquire modern steam for its main line trains would still leave the road with the problem of replacing power on its light-rail and light-density lines from which, it should be noted, Katy's 2-8-2s were restricted because of weight. And there were other considerations. For instance, the Katy and the Frisco were anticipating the establishment of "The Texas Special," a jointly operated streamlined train. Passenger department personnel from both roads favored diesel power for it.

One problem, fuel requirements, crucial to the change in motive power considerations on many roads, did not burden Katy. Its steam locomotives had burned oil for years, and any new diesels would like wise use petroleum products as fuel. Consequently no shippers would be alienated by such a change.

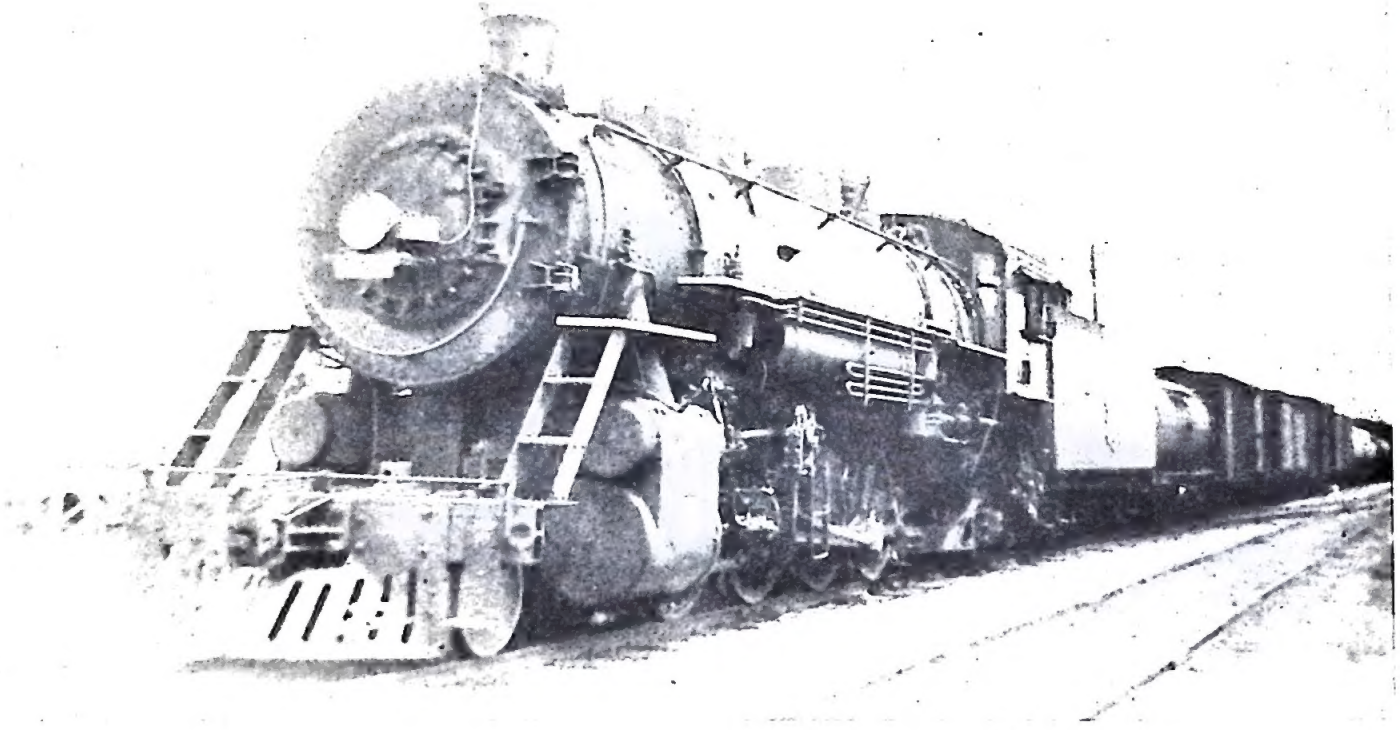
What really troubled Katy officials was not the initial cost of steam locomotives but the expensive nature of their maintenance. They were increasingly concerned about rising wages in all departments. The mechanical department, especially the roundhouse forces, became a particular bane to management during the inflationary days following the war. Consequently, Katy officials became especially devoted to the idea of closing intermediate servicing points and curtailing costly shop facilities. Steam power, of any type — new or old — would, they argued, always plague the company with inordinate "down time" and the resulting high labor costs.

Additionally, Katy management believed that newer steam power meant larger locomotives and that they, in turn, would require longer turntables, heavier shop cranes, extended roundhouse stalls, and possibly heavier bridges all along the main line.

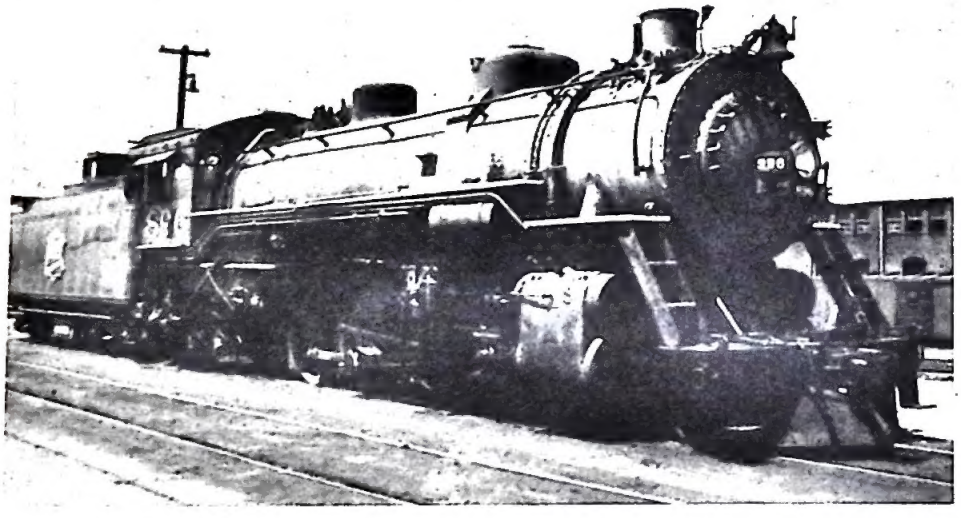
It came down to this: Katy management believed the era of steam had passed, but Katy management was not yet convinced that the diesel era had arrived. Thus it ordered these tests on its own road for the purpose of "determining to what extent diesel power might be successful in handling tonnage freight with required speed."

The EMD demonstrator, #291, was delivered to the M-K-T at Fort Worth late in the afternoon of January 10. It was thoroughly inspected by officials from both the railroad and the manufacturer, temporary Katy decals were applied to noses of the two A-units, and finally it was ready for service four days later. During the next 227 hours, or nearly 10 days, #291 was paired in competition with Katy's finest 2-8-2s between St. Louis-Kansas City and Houston via Fort Worth. The EMD demonstrator was in actual operation for 166 hours, rolling up 5311 miles—well over 500 per day on the average.

The drama actually began at 7:00 p.m. on January 14 when Air Brake Supervisor W. E. Vergan opened the throttle on #291 and headed nearly



One of the 2-8-2s of the Katy that was pitted against the new diesel was #871, seen at Denton, Texas in July 1941. Chas. M. Mizell, Jr.



Lima Built Class L-2-d rests between assignments at Tulsa, Oklahoma. June 2, 1948. Charles E. Winters

4000 tons of freight toward Oklahoma and an eventual St. Louis destination. Behind the locomotive were Katy business cars 402, 403, 419 carrying Vice President and General Manager H. M. Warden, General Superintendent of Transportation J. H. Little, other system and district officials, EMD engineers and officials, and Katy publicity representatives. Next came 79 loaded cars and a caboose.

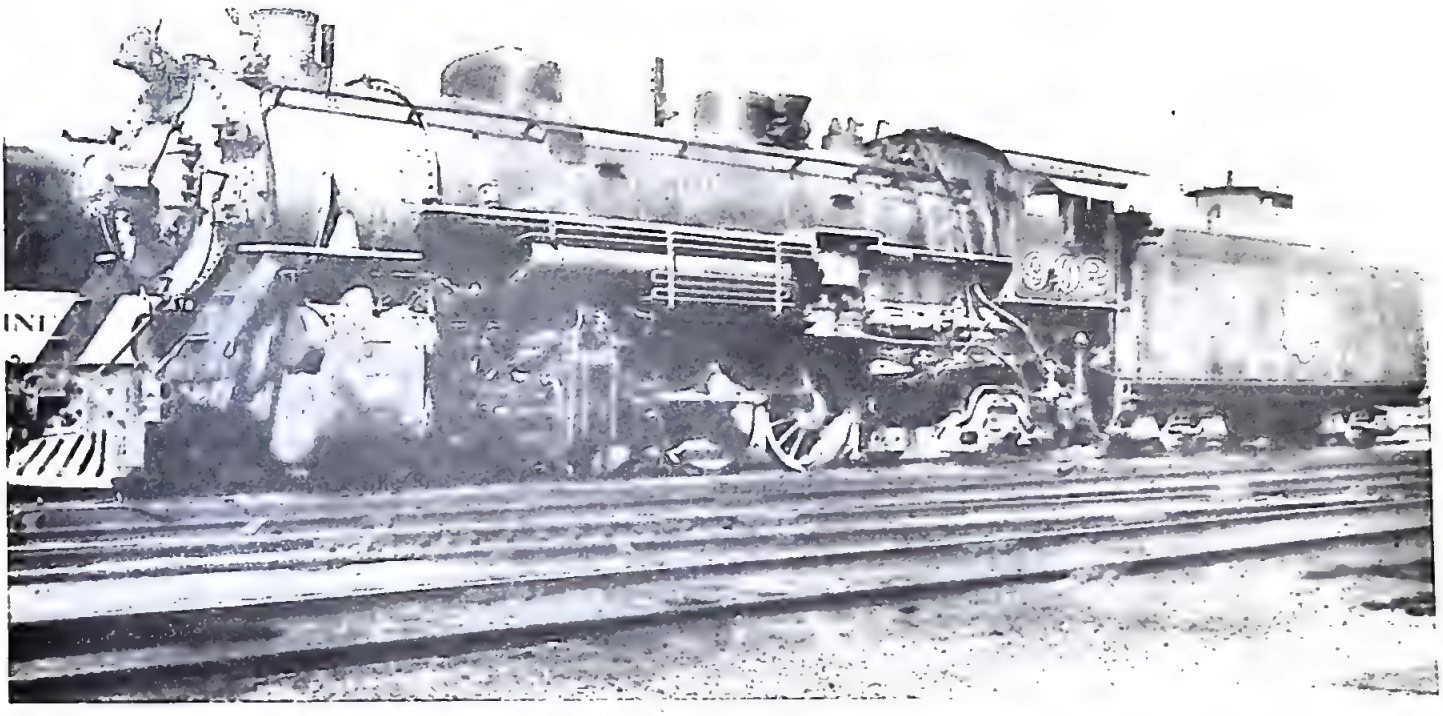
The performance of #291 on that trip surprised EMD officials and railroaders alike. A train of 4000 tons proved to be no match for the diesels; across Oklahoma speeds reached 65 miles per hour, demolishing traditional expectations. As one astonished Katy spokesman observed: "Railroad men often have dreamed of such a schedule!" EMD representatives were understandably proud, pointing out that while #291 was a four-unit A-B-B-A locomotive, Katy officials had required that all tests be conducted with only three units under power—the fourth being counted as dead tonnage.

EMD described its model F3 locomotive as consisting of one or more units rated at 1500 horsepower each. The increased horsepower rating over its earlier FT model was obtained by use of improved generators. Each unit had one 16-cylinder diesel engine, a direct current generator, an A.C. alternator, and four traction motors. Power for each unit was distributed from the generator to the traction motors mounted on the trucks of that same unit; traction motors were geared to the axle through spur gears. Each unit was electrically independent of the others except for certain low voltage wiring.

The manufacturer further advertised its F3 as having "V" type engines with a 45-degree angle between banks and having a compression ratio of 16 to 1. Solid unit injection was employed from an injector centrally located in each cylinder head. The speed range of the engines—controlled by an electro-hydraulic governor operated from the engineer's throttle—was from 275 to 800 rpm. All engines in locomotives of two or more units were controlled simultaneously; each notch on the engineer's throttle changed the engine speed approximately 75 rpm. Other pertinent data, according to EMD:

Approximate weight per unit: 230,000 lbs.
Fuel capacity per unit: 1,200 gal.
Gear Ratio: 62/15
Height: 14′ 11¼″
Width: 10′ 6⅞″
Wheel diameter: 40″
Maximum Speed: 65 mph

Preceding the start of the tests, newspapers in the states along the route had been given photographs of #291 as well as other publicity mate-



Built in 1923, this product of Alco saw the beginning of the end in January 1946. #902 is seen in Parsons, Kansas in September, 1947.
Harold K. Vollrath Collection

#920, one of the chosen testers, works a freight through Denton, Texas in January, 1941. Chas. M. Mizell, Jr.

rial. Journalists used this material freely, and as a result crowds turned out at every point; at terminals where stops were made, visitors were permitted to inspect the locomotive. They were impressed. But none were more impressed than the railroaders themselves. Old heads marveled at the spacious and relatively uncluttered cabs, and made particular note of the deep-cushioned, leather-covered chairs.

A writer for *Katy Employees' Magazine* concluded that the cabs had "appointments and conveniences designed to make them only slightly less comfortable than a living room." Compared to the crude cab conditions and riding qualities of steam locomotives, the F3s did seem remarkably plush.

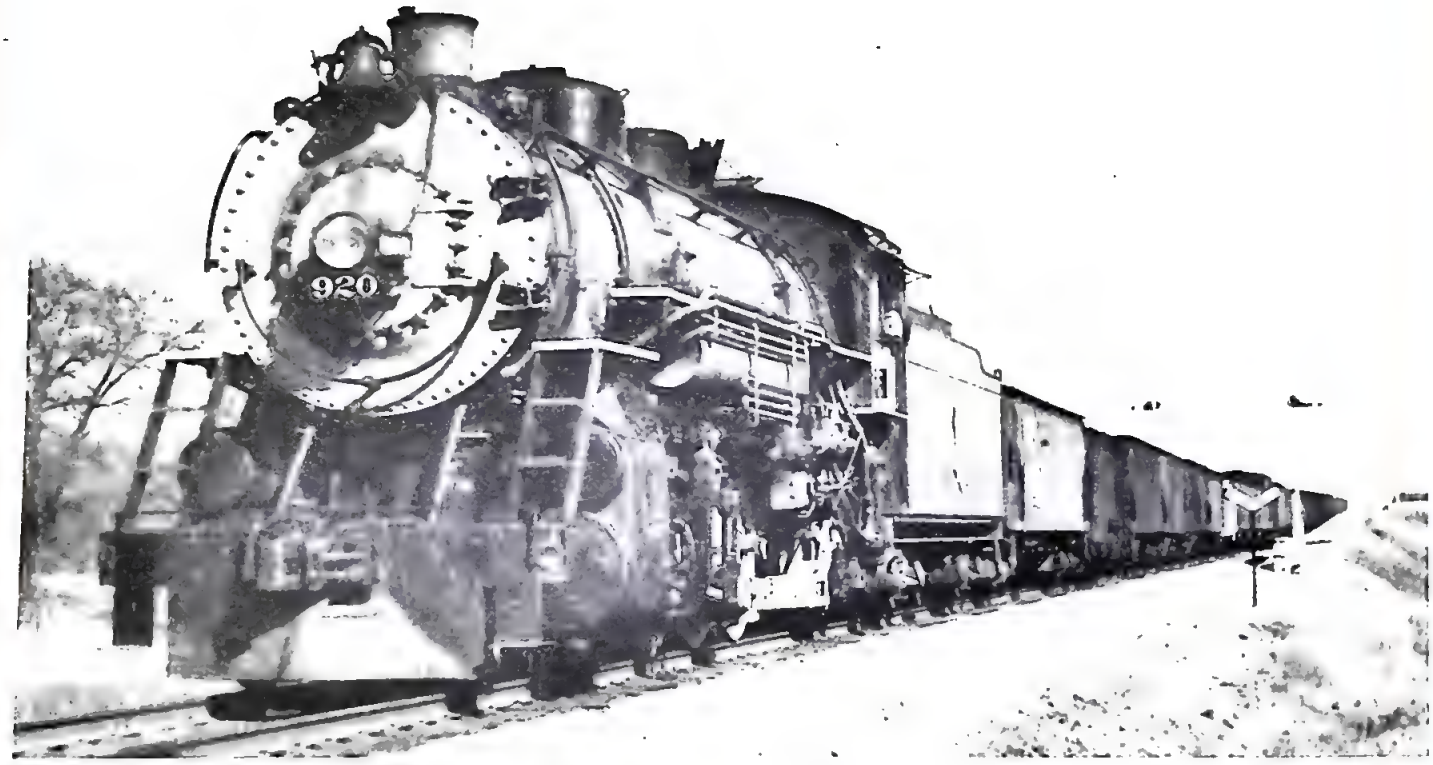
Katy officials applauded the esthetic values of the F3, but were more concerned about performance characteristics. The demonstrator did not let them down. Even the most optimistic of them was impressed when #291 started a 4000-ton train on a 1.5 percent grade near Big Cabin, Oklahoma after an air hose snapped. Traditionalists who maintained deep admiration for Katy's handsome Mikados were forced to admit that the 2-8-2s could not have performed thus. Some Katy officials decided then and there that, as one put it, "the diesel is the answer to the problems of tonnage and speed."

Yet the final judgment would have to wait, the officials knew, until the statistical data resulting from these tests could be made available. They were especially eager to have the results from the Choctaw and Cherokee Divisions. Indeed this Oklahoma trackage represented the premier "test tube" since it had the greatest variation in terrain as well as the heaviest grades—northbound from the Red River and Russel Hill just inside Oklahoma from Kansas. It also boasted the road's greatest traffic density—necessitating numerous starts and stops as the meeting of trains required. By March 18, the data comparing diesel and steam was available.

Five separate tests between the two forms of motive power had been mounted over the two Oklahoma divisions—three northbound from Denison, Texas, and two southbound from Parsons, Kansas. Test miles on the Choctaw and Cherokee Divisions totaled 1385. In all cases #291 had been measured against a single Mikado changed at each divisions point.*

Regretfully, Katy records do not reveal why the tests did not measure #291 against double-headed 2-8-2s.

*The Katy Mikados which were used for these tests on Oklahoma trackage included: 850, 871, 896, 902, 906, 916, 919, and 920.



#920 was the only steamer to succeed in moving a test train at greater overall speed than the diesels. She is seen here moving past the signals at the south yard limits of McAlester, Oklahoma.
Preston George

Neither do company archives reveal why the road tested the diesels at only 4500 horsepower (three units) instead of 6000 horsepower (four units). The adequacy of the road's passing tracks was probably not a factor, since the M-K-T traditionally handled 100-car trains of empties which were easily facilitated by lengthy and frequently located sidings. Perhaps Katy personnel reasoned that four unit diesels would handle longer trains, reducing train frequency and thus competitiveness.

In any event, the diesels proved victorious in virtually all categories.. Only once did a steam locomotive succeed in moving a test train with greater overall speed (#920 between Denison and Muskogee), but—as EMD representatives observed—#291 on that test had been burdened with 4952 tons while its steam counterpart had handled a mere 2365 tons. Statistics told the tale:

Cherokee Division
117. miles

	Diesel	Steam
Total time, all trains	14′54″	18′59″
Average time, per train	2′59″	3′48″
Average speed, per train	41.6 mph	33.4 mph
Total cars handled	393	299
Average cars per train	78.6	59.8
Total tonnage handled	19,563	13,520
Average tonnage, per train	3,913	2,704

Choctaw Division
158.3 miles

	Diesel	Steam
Total time, all trains	23′25″	28′00″
Average time, per train	4′41″	5′28″
Average speed, per train	34.1 mph	28.9 mph
Total cars handled	372	260
Average cars per train	74.5	52.0
Total tonnage handled	18,406	12,643
Average tonnage, per train	3,681	2,529

Moreover, the F3 diesels had used 8692 gallons of fuel in tests over the Oklahoma trackage while the eight participating 2-8-2s had burned 23,959 gallons. In terms of costs, this represented a 356.2 percent savings in favor of the diesel. Additionally, there was a savings of 15.7 percent in other supplies favoring the diesel. The bottom line: An 8 percent savings in operating costs—diesel over steam.

The facts were clear. EMD's #291 had demonstrated superiority over Katy's steam locomotives in four areas: A) It had been less costly to operate; B) it had handled trains at greater overall speed; C) it had handled more tonnage per trip; and D) it had gone through from one end of the railroad to the other — thereby negating the need to change locomotives at each division point. Indeed, the demonstrator had shaved nine hours from a system freight schedule that Katy was already proud of.

It fell to Katy's J. H. Little to make the final report. He told H. M. Warden that the three unit, 4500 horsepower F3 demonstrator had successfully handled trains over the road's maximum grades.

"In excess of its stated rating and at a speed claimed for it by the manufacturer, thus proving to us distinct advantages to be gained through the operation on our railroad of this type of power in the economical handling of substantial tonnage at the required speed with safety, thus putting us in a position to meet growing competitive requirements."

An order was soon placed with EMD for seven A-B-A locomotives. A writer

The four unit A-B-B-A set of F3s rests on Katy rails just before beginning the fateful tests that would replace steam with diesels on the M-K-T.
Leon H. Sapp Collection

for *Katy Employees' Magazine* proved to be overly cautious when he observed that "if diesel operation proves to be the new era in railroad transportation, the steam locomotive may find itself relegated to a past era—at least, on the Katy." Indeed, by late summer of 1946 Katy completely dieselized its Dallas yards by taking delivery of six new Baldwin switchers. Then came the exquisite E7As for "THE TEXAS SPECIAL." These were followed by the F3s, delivered to the M-K-T during the summer of 1947.

Katy had decided to opt for dieselization, but it went about the ordering process in a typical steam era fashion. It took, as one official put it, a "we aren't mad at anybody" approach, and ordered from virtually all manufacturers. Baldwin and EMD supplied switch engines; Alco, Fairbanks-Morse, Baldwin, and EMD all sent road-switchers; and EMD and Alco supplied both freight and passenger locomotives. It was understandable; that generation of officials represented the steam era, when locomotives were expected to "run forever," and when "a good man with a few tools could fix anything." The monster of parts supply and inventory was left for a future generation of managers.

Meanwhile, Katy's venerable steam locomotives received fewer and fewer calls as the company took delivery of the new power. By the end of 1952, the road's management could report that the entire system had been completely dieselized. Old hands who remained loyal to steam shook their heads and muttered to themselves that the entire matter had been moot anyway since those fateful tests of January, 1946, when EMD's #291 and M-K-T's venerable 2-8-2s had locked in mortal competition. And they were right.

AN "ELECTRIFYING" MUSEUM PIECE

Photos courtesy of The Milwaukee Road

The first main-line electric locomotive on the Milwaukee Road, and the world's largest, on display at Butte, Montana, in October, 1915, a few days before it will inaugurate electrified service over what for many years was the world's longest mainline electrification.

Restored to its original appearance, the Milwaukee Road's first electric locomotive rests in the Lake Superior Museum of Transportation at Duluth, a donation of the railroad.

The first of the Milwaukee Road's main-line electric locomotive is the last. The E-50, the 288-ton giant with which the Milwaukee began electrified operations across the Montana mountains in 1915, is now on display by its new owners, the Lake Superior Museum of Transportation in Duluth.

The Milwaukee officially donated the historic electric to the museum on November 11, 1977, 19 days short of 62 years from the day that it first pulled a train from Three Forks, Montana, to Butte.

That train itself was historic: It was the first to be operated electrically upon the completion of the first segment of what for many years was the longest main-line railroad electrification in the world.

The E-50 was probably the oldest operable locomotive in the U.S. when, in 1974, the Milwaukee pulled the switch on the last of its obsolete catenary system and turned its few remaining electrically powered trains over to diesels. While other members of its own class and newer electrics alike were cut up for scrap, the E-50 was stored in the engine house at Deer Lodge, Montana.

At the time of its manufacture by General Electric Company in September, 1915, the 10200 was the largest electric locomotive in the world. It was the first to operate on direct current at voltages as high as 3;000. It inaugurated the practice known as regenerative braking, in which the locomotive's traction motors become generators converting the energy created by the downhill momentum of the train into electric current to be fed back into the trolley, and slowing the train through the friction of the process.

The 10200 was one of 42 nearly identical engines with which the Milwaukee began electrification in 1915 and 1916 between Harlowton, Montana, and Avery, Idaho; in 1920 between Othello, Washington, and Tacoma; and in 1927 into Seattle. The 10200 and 29 like it were the railroad's first freight-electric fleet. Twelve more, differing only in that they were geared for higher speeds and contained train-heated steam boilers, originally handled the passenger trains.

Huge for the time—112 feet long—the 10200 was constructed to negotiate the sharp curves of the Milwaukee's crossings of the Belt, Rocky, Bitterroot, Saddle and Cascade Mountains. Its body is really two articulated bodies semipermanently coupled. Each half of the locomotive is mounted on a pair of articulated frames. For all its length, the 10200 has a maximum fixed wheelbase of only 10½ feet.

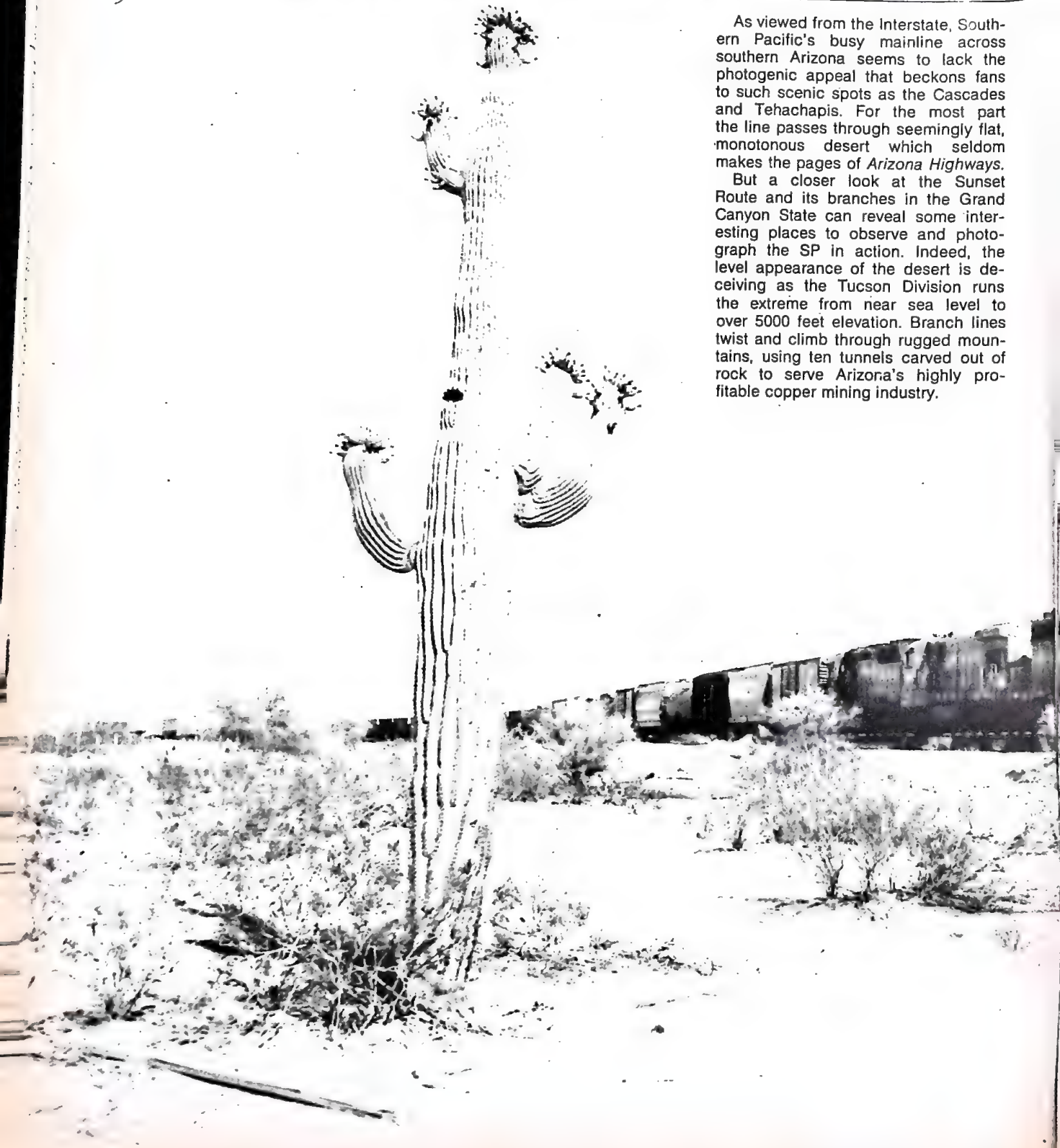
The 10200 could pull almost twice as much as could any steam locomotive used in the mountains. It operated with great reliability, shrugging off 40-degree-below temperatures in which steam locomotives simply wouldn't steam as they should.

But, ultimately, the 10200 became obsolete as diesel-electric locomotive technology and the advancing age of the Milwaukee's electrification, and of the electric-locomotive fleet itself, caught up with it. It was returned to Deer Lodge when the Coast Division electrification was discontinued in 1971.

SAGUAROS, SEMAPHORES AND

As viewed from the Interstate, Southern Pacific's busy mainline across southern Arizona seems to lack the photogenic appeal that beckons fans to such scenic spots as the Cascades and Tehachapis. For the most part the line passes through seemingly flat, monotonous desert which seldom makes the pages of *Arizona Highways.*

But a closer look at the Sunset Route and its branches in the Grand Canyon State can reveal some interesting places to observe and photograph the SP in action. Indeed, the level appearance of the desert is deceiving as the Tucson Division runs the extreme from near sea level to over 5000 feet elevation. Branch lines twist and climb through rugged mountains, using ten tunnels carved out of rock to serve Arizona's highly profitable copper mining industry.



SWITCHBACKS

By Gary G. Allen Photos by the author

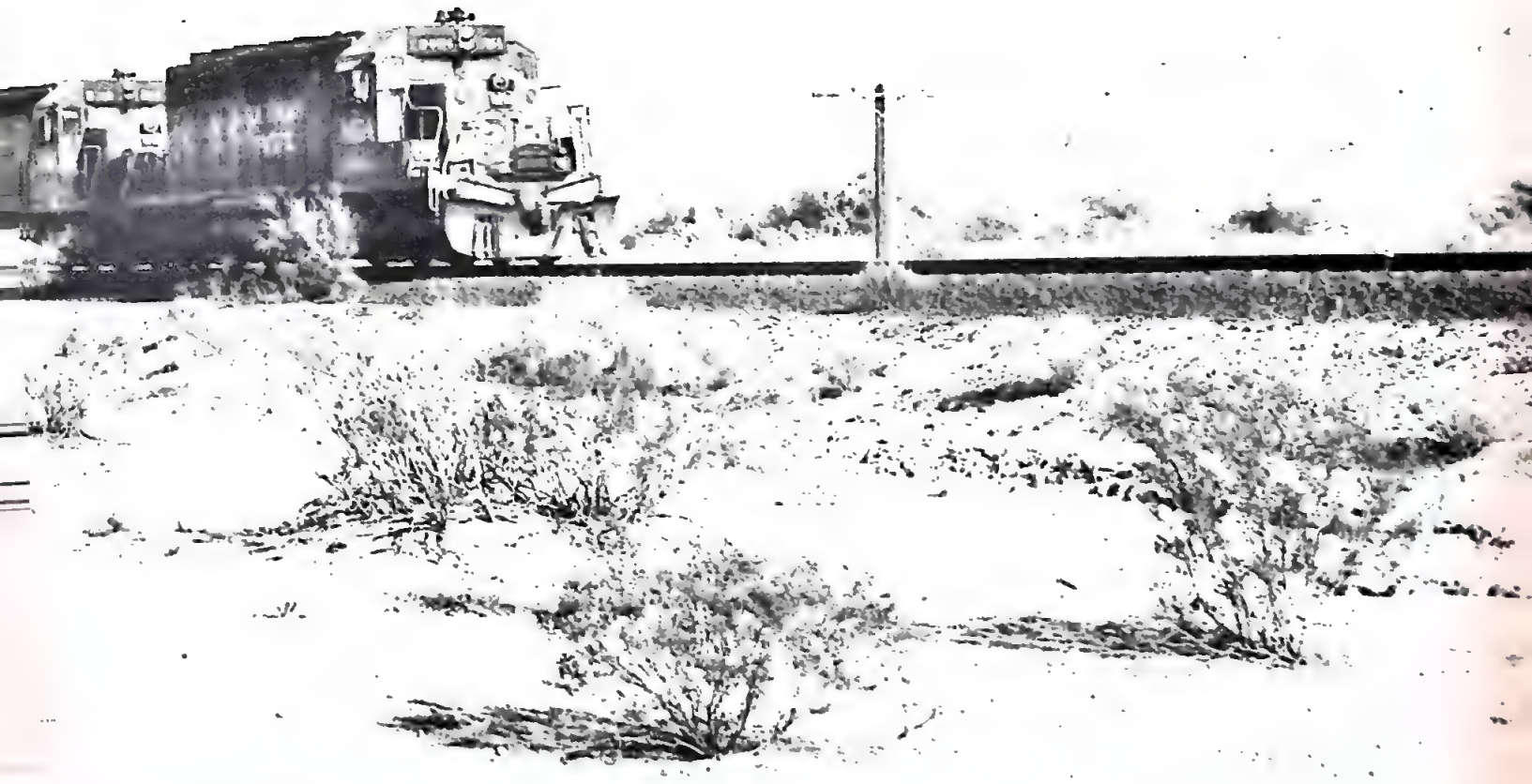
SOUTHERN PACIFIC'S ROUTE THROUGH ARIZONA PROVIDES A CATALOG OF CONTRASTS

Let's start at Yuma, where SP first entered Arizona a century ago, and follow it across the state. Switchers, in the form of SW 1500s, work the yard and nearby industry. SP's "paper railroad," the 18.1 mile Yuma Valley RR runs south out of town along the levee of the Colorado River which separates California and Mexico from Arizona, to serve seasonal sugar beet and cantaloupe packing sheds.

Heading east the mainline passes citrus fields that flourish in the irrigated desert, then swings around rugged, barren Dome Mountain which forms a photogenic background, especially in the late afternoon when the sun brings out brilliant colors in the rocky hills.

From Wellton, where the secondary Phoenix Line branches northeast, to Gila Bend there are few curves, though a small hill at Mohawk puts a couple of kinks in the single track mainline. At Aztec a lone water tank looms over the landscape, one of several remaining from the steam era. In Gila Bend, the first real town since Yuma, the short line Tucson, Cornelia & Gila Bend RR's mixed train from the copper mining community of Ajo can be found each weekday morning around 9 a.m. at the interchange while its crew goes to beans. The old depot was torn down a few years ago, but the TC&GB conductor will be glad to sell you a ticket to Ajo, which entitles the bearer to ride the caboose.

At Gila Bend the Interstate and railroad part company for over sixty miles as each finds its own route through the Maricopa Mountain Range. A good dirt road follows the SP and at the summit, some 15 miles out of town,



A freight moves west in the Maricopa Mountain range, east of Gila Bend.

With a water tank in the background, #8660 moves east from Aztec. Most siding phones such as this have been taken out of service.

interesting photo locations can be found. Instead of trees, the hills are covered with a forest of saguaros, a giant cactus which grows up to fifty feet in height and is native to the region. The saguaro lives from 150 to 200 years, and its blossom is the official state flower. These stately cactus can be found along much of SP's lines, and their inclusion in a photograph leaves little doubt but that the picture was made in Arizona.

At Casa Grande, the first train order station in 186 miles since Yuma, a local works nearby industrial sites and a couple of mine spurs just west of town. It's farm and ranching country to Picacho where the Phoenix Line rejoins the main, then desert into Tucson, 251 miles east of Yuma. Near Casa Grande the Interstate re-appears to parallel the SP past Picacho Peak, a landmark which forms a scenic backdrop for the straight, fast track to Tucson.

The single track Phoenix Line still uses the old semaphore system for most of its 137 miles from Wellton to Phoenix. Much of the line is strait and remote, with but one town (if you can call it that) in 107 miles between Wellton and Buckeye. Hyder boasts a general store with a gas pump, cafe, section crew quarters, a few houses and a lot of ruins from more prosperous times. A good road, some of which is paved, follows the tracks for several miles and the semaphores make the line worth visiting. Amtrak's tri-weekly *Sunset Limited* and one daily freight in each direction use this route.

Usually, the only other train you can count on being put on the line is the Buckeye Local, which trundles west out of Phoenix each afternoon for a session of switching packing sheds and other industrial sites in the farm country which extends as far as Buckeye. 16.7 miles west of Phoenix the 5.4 mile Litchfield Branch runs north from Litchfield Junction to serve industry at Litchfield Park. A few miles west of Buckeye in the hilly desert a spur was recently constructed north off the Phoenix Line some five miles to serve a nuclear power plant, a chore which the local performs. There is an old ex-SP Baldwin switcher that putters around the plant, but the place is strictly off limits, especially to photographers.

Near downtown Phoenix close to the brick Amtrak depot, SP interchanges with Santa Fe, the only other transcontinental railroad in Arizona. While Santa Fe's line from the north doesn't extend beyond Phoenix, they do enjoy a good share of the local business. A few blocks east of the depot SP maintains engine facilities for light repairs, while nearby SW1500s and Geeps work the yard and industrial spurs.

The Phoenix Line heads southeast out of the city toward its terminus into the mainline at Picacho, and several trains daily run through to Tucson. The branch lines and spurs around the greater Phoenix area run out through level farm land that's slowly giving way to ever expanding suburbs to serve packing sheds and industrial parks. Nine miles east of town the 7.7 mile Tempe Branch swings south from Tempe Junction to West Chandler, and another eight miles along near the train order station in Mesa the 19.6 mile Chandler Branch heads south from McQueen to Dock.

Forty-three miles east of Phoenix in a remote desert setting at Magma, the copper hauling Magma Arizona RR interchanges with SP tri-weekly when their Baldwin switchers come burbling in from the mine at Superior around mid-morning. Here the Phoenix Line swings straight south (by the compass, since everything on the SP is officially east/west) through cactus covered sandy hills, then into farm country to Picacho, 72 miles from Phoenix.

The Duval local passes the Pima Local at Sahuarita on the Nogales Branch.

#8667 with a single reefer on its way to Ft. Huachuca, having left the rest of its train on the Douglas Branch at Lewis Springs.

Also at Magma the 51.3 mile Hayden Branch heads east to Hayden, deep in copper mining country. A few miles east of Florence the branch enters some of the most beautiful, rugged, and inaccessible desert mountains you can imagine. Far back in the colorful, rocky hills in a natural garden of saguaros and other cactus, the track passes through Tunnel No. 1 in an area so remote that according to the Pinal County Sheriff's office you need a horse to reach the spot. However, the eastern portion of this picturesque branch is easily reached, in a round-about way through Superior, and the highway meets the railroad at Ray Junction (Kelvin on the map).

Kennecott's EMD power bring sixty car unit ore trains down from Ray Mine to the Junction where they exchange cars with SP, then go rumbling back up hill with empties in an operation that continues 24-hours a day. Meanwhile, SP Geeps begin the 12.4 mile trip to Hayden in block signal territory, passing through two tunnels carved out of rock. Near Tunnel No. 2 an interesting phenomenon of nature appears each nite on the side of the hill as the headlight of eastbounds swinging around a curve pick up what looks like a giant human eye, complete with eyebrows, staring down the track at approaching trains. But during the day the same spot is just so much sand and rock. It's an interesting sight crews always enjoy pointing out to new crewmen as the ore train makes its way along the Gila River.

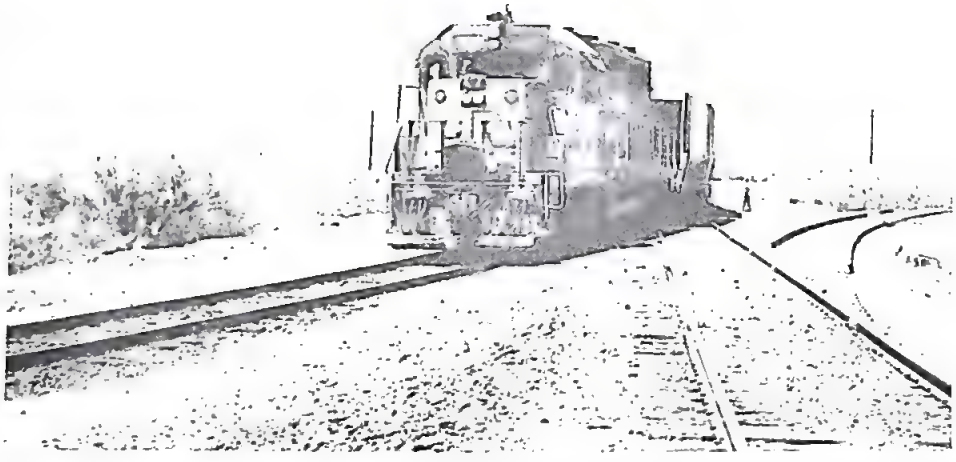
In Hayden, a train order station, a job keeps busy switching the Kennecott concentrator and making trips down to the interchange with the San Manuel Arizona RR, whose train puts in an appearance around noon, six days a week. This job also makes an occasional run over a 3.3 mile spur beyond the end of the branch to Winkelman. The Hayden Local, out of Tucson, makes its run at night, tying up in Hayden where SP operates a bunkhouse and beanery for its employees.

Tucson is the hub of the division and only crew change point between Yuma and Lordsburg, New Mexico (trains over the Phoenix Line change

No. 2509 in Nogales, Mexico, just across the border, picks up cars from the Pacifico. SP goes 500 feet into Mexico at this location.

crews at Phoenix). Close to downtown the *Sunset Limited* uses the old passenger depot, which also houses division offices including that of the Chief Train Dispatcher. The yards, worked by SW1500s, and engine facilities are located a short distance away. While these facilities are, of course, off limits to visitors, the whole operation can easily be viewed from a highway overpass which crosses over the shops and yards.

The 62.9 mile Nogales Branch heads south from Tucson through Green Valley along the Santa Cruz River in farm and ranch country, with the local making its run to the border at night. To the west, in the Sierrita Mountains, copper mining came to life in a big way in the early Sixties, and to serve the mines some thirty miles of spur tracks were built from two locations off the Nogales Branch. Each morning three locals leave Tucson for a day of switching at the mines. Near mile post 1000 the Pima local climbs out of the valley to work the Asarco and Pima mines, while the Anamax and Duval locals continue to Sahuarita, fifteen miles below Tucson, then head west



At an elevation of 5100 feet, diesel 6575 is on the switchback at Don Luis.

up a steep grade to work their respective mines. As there are no signals to protect their moves, the trains keep in contact by radio when they are ready to use the main spur to Sahuarita. It should be noted that while several spurs of some distance have been constructed in Arizona in recent years, SP no longer classifies them as branch lines.

At Nogales, SP conducts its freight business and maintains a train order station in the old brick two story depot a couple of blocks from the border. An SW1500 works the yards and makes an interchange with Mexico's Pacifico in the early afternoon when it ventures 500 feet into Nogales, Mexico. This is the northern terminal for Mexico's second largest railroad, over which produce is shipped to U.S. markets, providing a healthy income for both A1 Pacifico and SP. The A1 Pa-

cifico was once the Southern Pacific Railroad of Mexico, and Nogales was an important stop for passengers traveling to Guadalajara and Mexico City.

The mainline east out of Tucson is double track for some forty-five miles, with semaphores being used from just west of Vail to Mescal where single track resumes. The reason the old arm signals have survived on an otherwise all CTC mainline across Arizona is that from Vail to Mescal the railroad is split into two lines which cross on bridges, then separate as far as a mile apart.

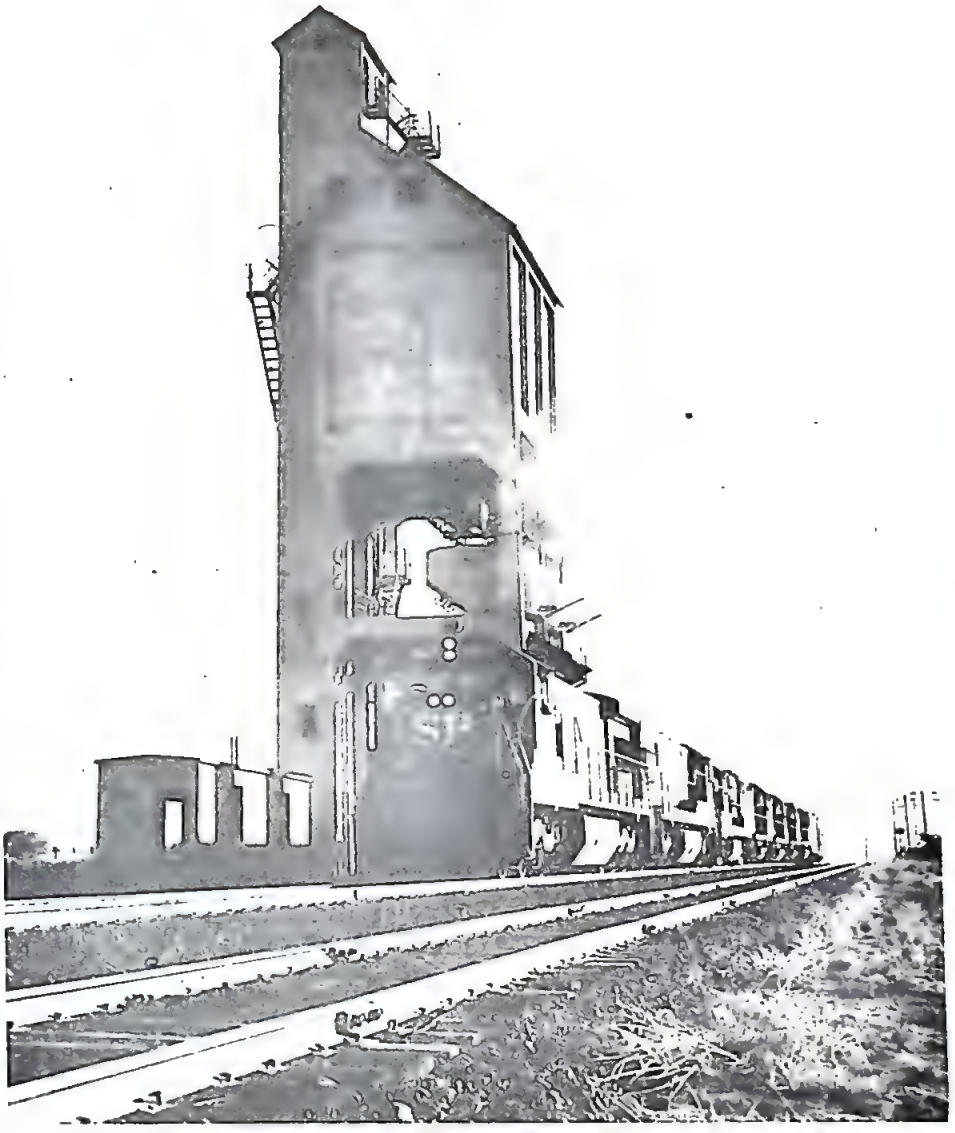
Eastbound Track No. 2 (20.3 miles, Vail to Mescal) is SP's original mainline, twisting its way along Cienega Wash where all trains are restricted to speeds as low as 30 mph. There are a number of good photo locations through this hilly terrain, and at Pantano an old pump house and abandoned water tank by a semaphore add a touch of yesterday to a modern railroad. The signals are placed for one-way moves, and track No. 2 is best viewed in the morning when the sun is into the face of eastbounds, including the *Sunset Limited,* which passes this way about 9:30 a.m.

Westbound Track No. 1 was part of the old El Paso & Southwestern, which SP acquired years ago. This track takes a more direct route along the north side of the hill, and westbounds cover the 18.9 miles between Mescal and Vail at speeds up to 70 mph. The summit is reached at Mescal where the single track begins its twisting descent to Benson, passing a concrete coal tower that remains from the early years of steam.

In Benson, near a small metal shed that serves as Amtrak's flagstop depot, the 74.4 mile Douglas Branch heads southeast toward the border. Originally this was the EP&SW mainline through Douglas to El Paso, later to be operated by SP as their South Line until the early Sixties when it was abandoned from Douglas east. Then the signals were removed and the single track mainline was reduced to branch line status, at the same time losing its identity as the South Line. However, SP's original mainline, which had become known as the North Line (through Lordsburg, NM to El Paso), still retains that identity in the form of the North Line Dispatcher, and the North Line Local.

Two trains daily operate over the Douglas Branch, on out of Tucson, the other out of Douglas, and they usually meet on the mainline around Mescal. The branch passes through a wide valley of farms and ranches with typical rugged desert mountains forming a distant background.

At Lewis Springs, twenty-six miles



The Eastbound Globe local waits in the hole for the westbound Bowie local. Crews will exchange trains here at Calva.

The coaling tower at Mescal dates from the early days of steam, and eastbound #8761 just blows on by.

Just east of Clifton at Tunnel 6, the train has made pickups of cars from the Phelps-Dodge Morenci Mine copper operation.

below Benson, the 12.0 mile Ft. Huachuca Branch heads west to serve an Army Base. The little used branch is worked by the Douglas Local.

Near the border the Douglas Branch swings east into hilly desert country, passing Naco where an interchange with a branch of the FC A1 Pacifico was made until the early Seventies. Fifty-two miles south of Benson at Bisbee Junction the 5.7 mile Bisbee Branch heads north toward the historical mining town of Bisbee. Around Bisbee there are miles of unused spurs and abandened right-of-ways leading to inactive mines.

Although heavy power is used on the Douglas Local, at least one four-axle unit must be in each lash-up to protect moves over the Bisbee Branch. When there are gons for the leach plant at Bakerville, a car of beer or other freight for the Bisbee area, a Geep is cut out and heads up the hill, leaving the rest of the train at the Junction. The tracks around Bisbee reach over the 5100 foot level, highest elevation on the Tucson Division.

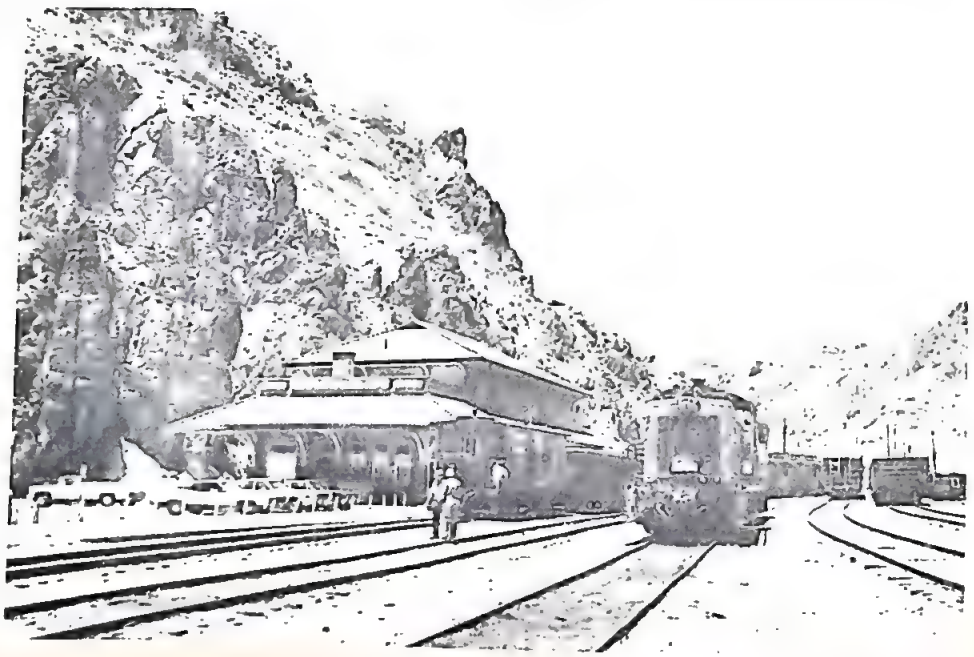
At Corta the Don Luis Branch heads west off the Bisbee Branch for 2.5 miles to Galena, though the local seldom ventures beyond Don Luis where cars of silica are loaded for the Phelps-Dodge smelter at Douglas. Don Luis is the beginning of one of the rarest forms of railroading today, especially on a class 1 carrier. To reach the Cole and Dallas mines high on the side of the hill, SP uses no less than three switchbacks. However, with the exception of part of Switchback No. 1 where the silica is loaded, these tracks are seldom used anymore.

Eastbound from the Junction the Douglas Branch parallels the well patroled border, at times within a few feet of the barbed wire fence which divides the two nations. A branch of A1 Pacifico parallels the border, and occasionally trains of both lines can be seen at the same time. In this area SP passes through Crook Tunnel, which can be reached by a short hike over the rocky terrain. Most of the branch is inaccessible, and only at Paul Spur does the highway follow the tracks for the last eleven miles into Douglas.

The once elegant depot with its forlorn water fountain reflect bygone days when Douglas was an important stop for transcontinental passenger trains. Now the aging Spanish style depot houses SP's freight offices and serves as train order station and terminal for the Douglas Local. The power lays over night on the wye adjacent to the depot, in company with a lone

Yes, they still use semaphores on the Phoenix line through Arizona, as #9197 nears Hyder.

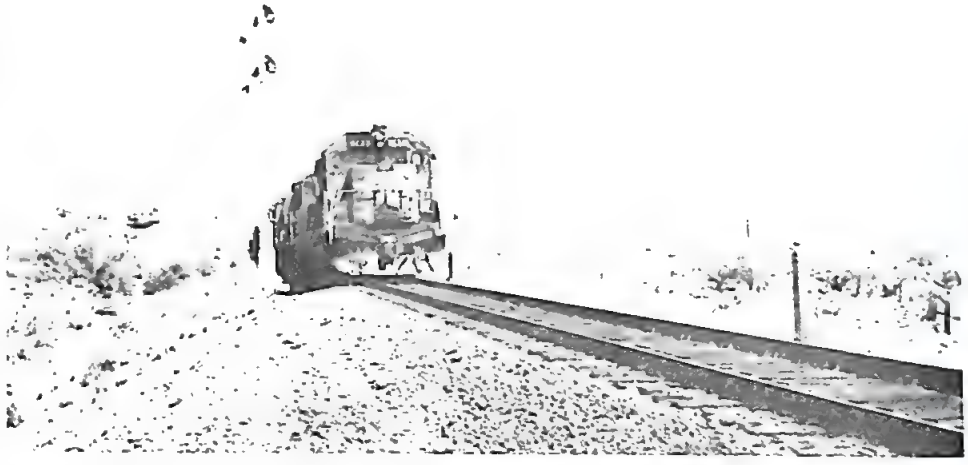
Phelps-Dodge Nos. 3 and 4 at Clifton, next to the Clifton local which has just arrived from Lordsburg, New Mexico.



No. 8833 westbound, with headend of train in Arizona and the caboose still in New Mexico, near Steins.

The Sunset Limited *meets a freight at Dragoon, the highest point on the mainline between Los Angeles and New Orleans.*

Originally the El Paso & Southwestern RR mainline between Mescal and Vail, #9135 now travels on what they call Track 1.



SW1500 that performs yard duties. During the day the switcher works the Phelps-Dodge smelter just west of town, then an afternoon job putters around Douglas and makes up the local's train. An interchange is made with A1 Pacifico in the evening when cars are shoved up to the fence, but neither engine crosses the border.

Continuing east from Benson, which sits in a valley between two mountain ranges, the mainline climbs into the Dragoon Mountains. While there are no helper districts on the Tucson Division, helpers, in the form of leased BN remote control units, do assist some through trains across Arizona. At the community of Dragoon SP reaches the 4607 foot summit, highest point on the mainline of the Sunset Route between Los Angeles and New Orleans. In spite of its elevation, snow is not common, though a brakeman recalls a recent winter storm: "It snowed so hard at Dragoon we had to pass signals with a fuse during the middle of the day."

On the east side of the mountain near Cochise a five mile spur has been laid south to a powerplant currently under construction. When the plant is operational plans are for unit trains to run through the site on a balloon track, dumping their coal without stopping. Further east trains speed across Wilcox Dry Lake, then slow to pass through Wilcox where an old wooden depot now serves trucks.

At the train order station in Bowie the 133.8 mile Globe Branch heads northwest to the copper mines at Miami, and departure time of the Bowie Local depends upon the arrival of the westbound North Line Local with cars from El Paso. Usually around noon the Bowie Local gets out of town heading north through remote desert for most of its thirty-nine miles to Safford. Then it's farm land as the local parallels a highway to Bylas, where it sets out on its own through the desert across the large San Carlos Apache Indian Reservation. At Calva, 78.7 miles from Bowie, the local heads into a lonely siding to await the arrival of the eastbound Globe Local. Its counter-part will have left Globe about 1 p.m., after it has returned to town from switching at Miami. They try to time the meet as close as possible, which varies anywhere from a "headlight meet" to somebody waiting in

PHOTO GALLERY

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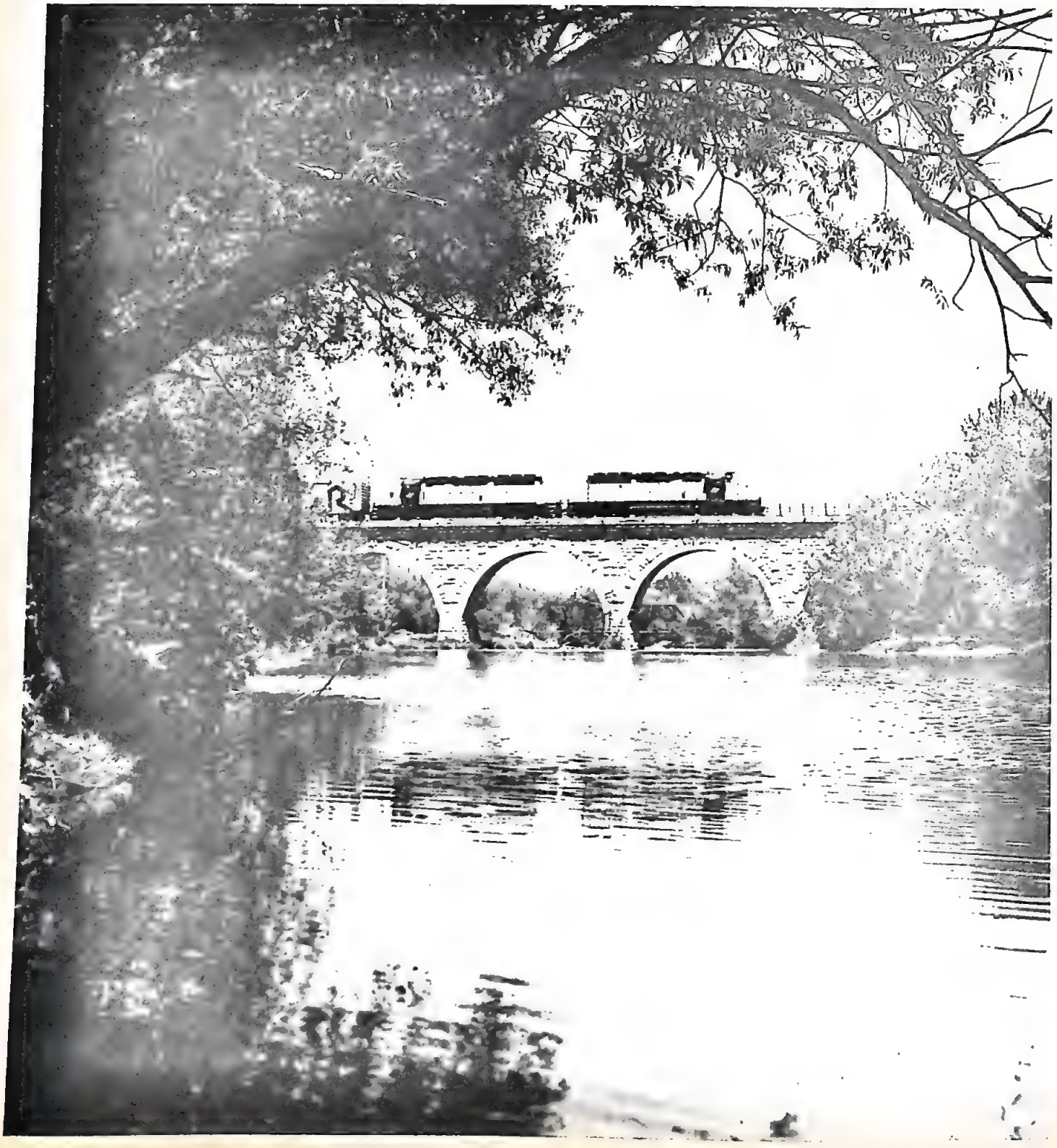
Chicago & Northwestern train # 576, powered by a pair of SD40-2s, highballs across Tiffany Bridge at Tiffany, Wisconsin in May of 1966, en route from Madison, Wisconsin to Chicago. The stone arch bridge, which spans Turtle Creek, was built in 1869 and is 387 feet long, consisting of five full arches. David Franzen



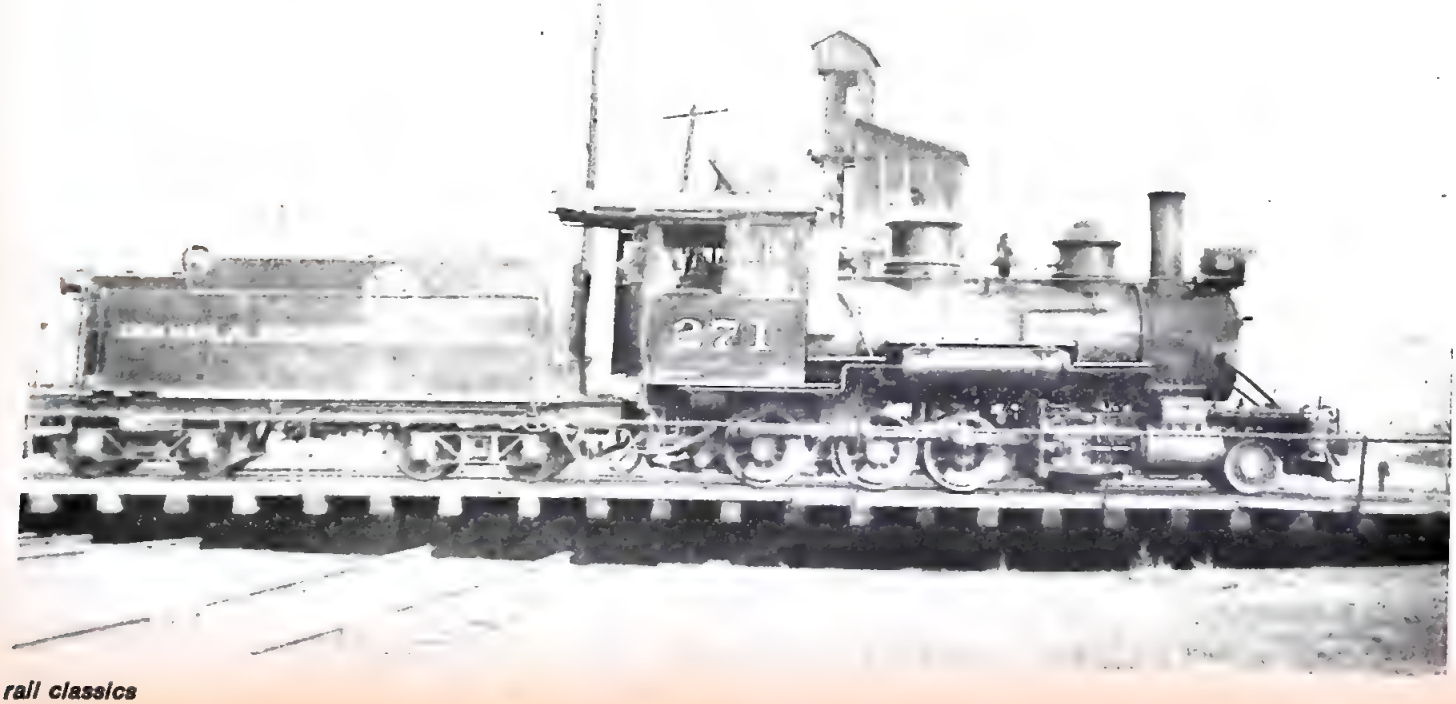
Long before the coming of Amtrak and a certain sameness in the passenger scene, sights such as this were common. The Burlington's Morning Zephyr, Train 22, prepares for departure from Minneapolis, Minnesota in June 1961, behind a shiny and proud E-5 diesel.
Jim Scribbins

Something a bit different in rosters is this shot showing the entire diesel roster of the Genesee & Wyoming. From the left at Retsof, New York, are the following: numbers 43, 1976 and 42, all Alco RS-1s; #1776, an Alco S-4; #25, an RS-1; and #35, and an S-4.
Richard W. Story

GENESEE WYOMING

Nothing outstanding about Kentucky & Tennessee's #12, a 2-8-2 built by Baldwin back in 1911. Nothing, that is, until you look a bit farther and find that the K&T bought her from the Southern Railway, being their former #4501. And yes, this is the same #4501 now proudly operated in steam excursions by the Southern, who brought her back home in 1965.
John Krause

400
400



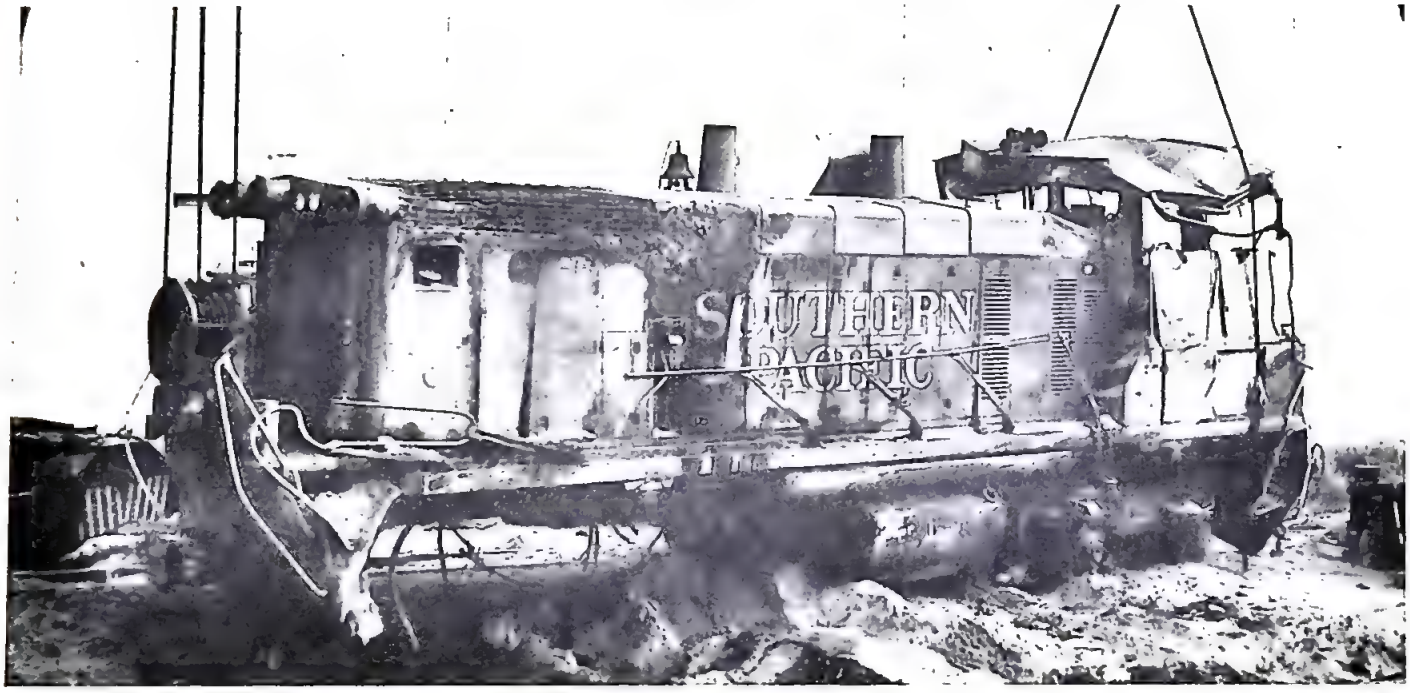
Aberdeen & Rockfish, "The Road of Personal Service" reads the GP38 #400, telling the story of this interesting little 45 mile shortline. The train is arriving a Aberdeen, North Carolina from Fayetteville, the two ends of the railroad, in September 1974. Don Wallworth

Durango, Colorado is now a bustling tourist town, but back in 1939 it was just another small town with a railroad terminal. The Denver & Rio Grande narrow gauge had its second largest facility here, and on June 30th Consolidation #271, a rebuilt C-16, was getting a ride on the turntable.
R. H. Kindig

The famed Virginia & Truckee was reaching the end of the line, in more ways than one, in 1949, as the mail is unloaded from a car obtained from the Yosemite Valley Railroad two years earlier. The car is now preserved at California's Castro Point Railway Museum.
William C. Corbett

WHAT'S HAPPENING

RAIL CLASSICS will pay $5.00 for each photo used in What's Happening. News photos of all types are welcome, both black & white prints and color transparencies. A self-addressed, stamped envelope is required for return of unused material. Send to WHAT'S HAPPENING, Rail Classics, 7950 Deering Ave., Canoga Park, CA 91304.

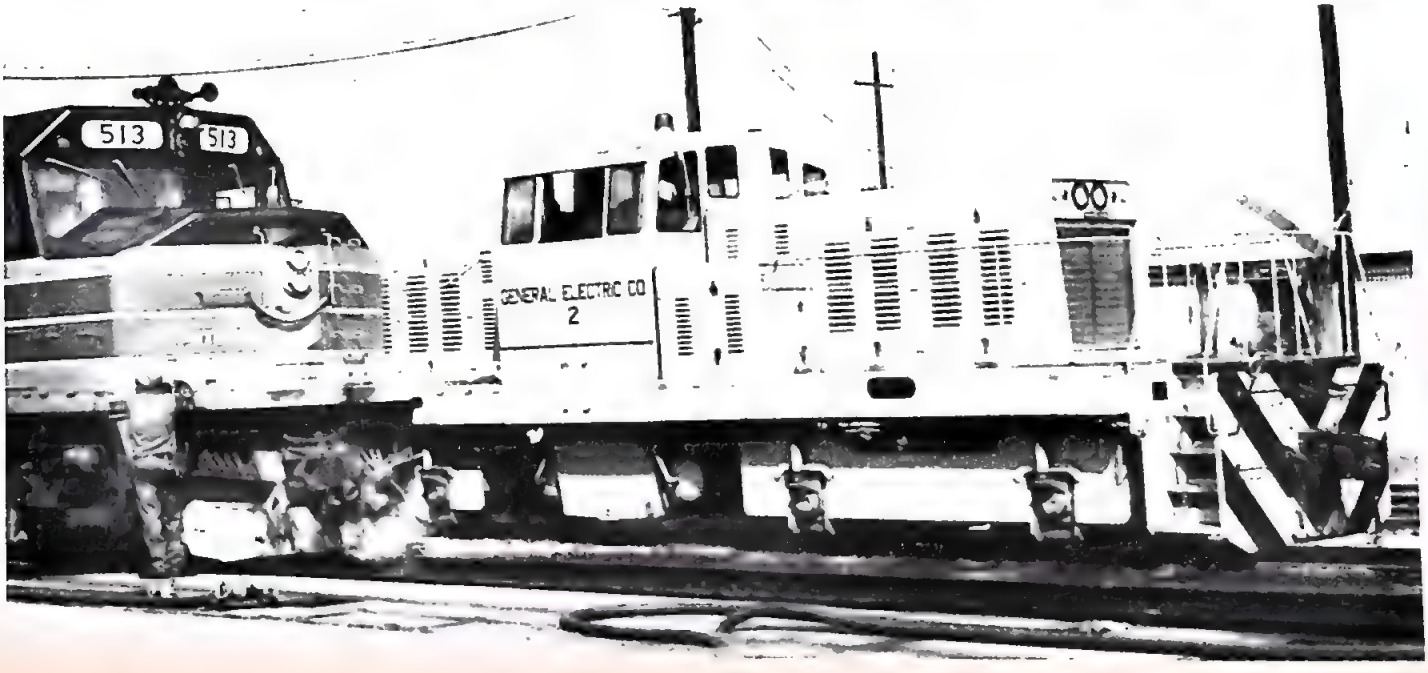


The locomotive of a Southern Pacific local overturned September 19th when it suddenly entered a siding off the S.P.'s mainline in the San Fernando Valley, north of Los Angeles. The SW1500 #2463 suffered extensive damage, and four crew members received minor injuries. Two juveniles were arrested a few hours later for tampering with the lock on the switch, causing the accident. One has been convicted of attempted murder, and the other is awaiting trial. Sterling R. Marcher

October 18, 1977 was the first day of revenue freight operations for the Crab Orchard & Egyptian RR in Marion, Ohio. The steam tourist line is using their Porter 2-4-2 steam locomotive for the operations, involving an interchange with the Missouri Pacific. The eight and a half mile line presently serves thirteen industries.

The Durham & Southern's last locomotive recently emerged from the shops lettered for new owner Seaboard Coast Line. The GP38-2 was formerly D&S #2001, but is now SCL #557, painted black with white band and frame edge, and white roof. Lon Coone

General Electric's new demonstrator #2 was working recently on the Santa Fe. The unit is seen alongside Amtrak's Lone Star *at Fort Worth, Texas. General Electric hopes to capture some of the vast switcher market that EMD has had pretty much to itself the last few years.* Gary W. Zeitler



A *The first eight of twenty-one F40PH diesels built for the Regional Transportation Authority (of Chicago) are now in service on the Rock Island. #100, the "Ernest S. Marsh," is seen at Blue Island, Illinois. It is reported that 16 of the F40s will go to RI with the balance being used on the Northwestern's commuter trains.* Mark Saxon

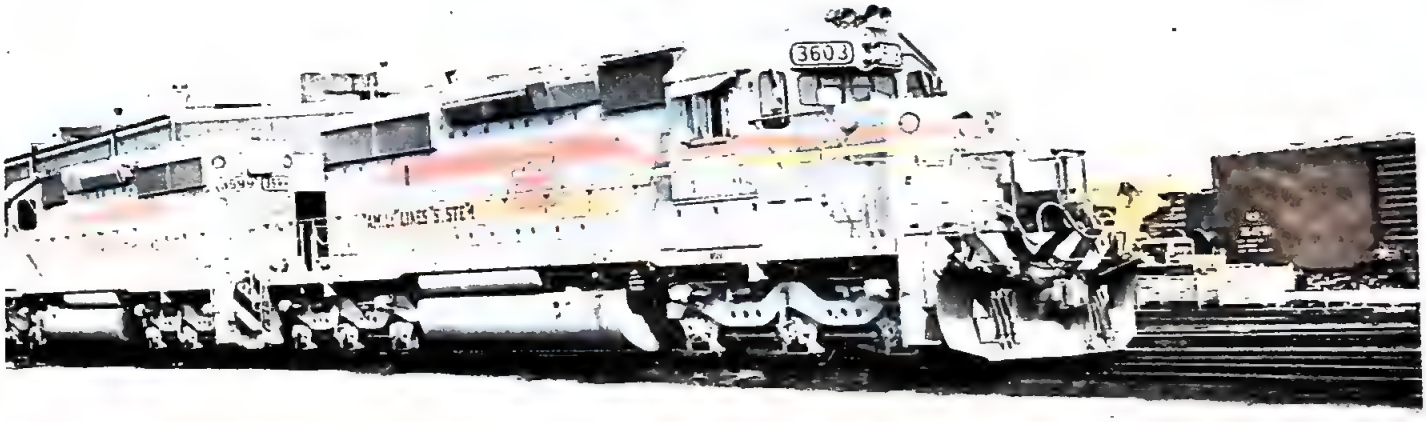
B *The Family Line (Seaboard Coast Line/ Louisville & Nashville) recently took delivery of these new EMD SD40-2s, which exhibit a new paint scheme. The controlling road's initials will appear under the cab window as shown. Unit seen at C&EI's Dolton Yard in Chicago, 10/24/77.* Mark Saxon

Seaboard Coast Line's GP-7 #973 took an unscheduled run down an embankment at the Hamlet, North Carolina yard. An engineer lost control of the unit and the locomotive was pushed down the hill by the weight of the following cars. A pair of bulldozers helped the crane in getting the unit back on the track. Bill Bergman

C *Soo Line has taken delivery of [illegible] new EMD GP38-2s, with #795 [illegible] last to arrive in October. These units have red lettering and numbers, rather than the previous black. The locomotives are the first four-axle power purchased since they bought a single SD40-2 in 1969.* Michael Hoff

A

B



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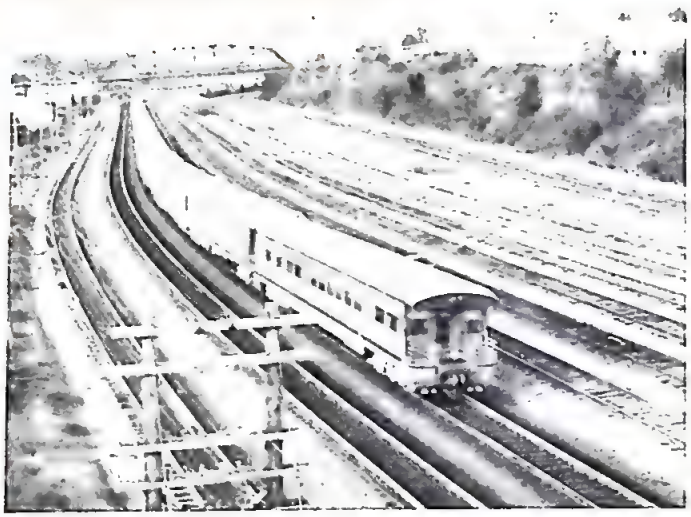
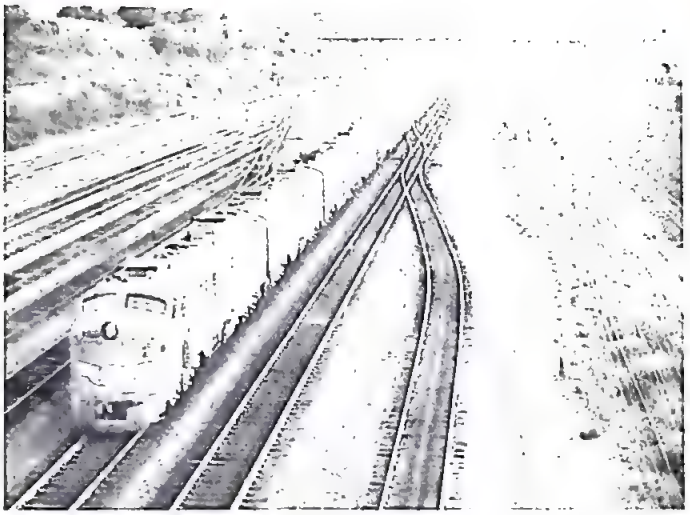




When the Union Pacific does things, it's usually with style, as evidenced by this special used to carry football fans from Cheyenne to Laramie and return, September 18th, 1977. The equipment is used for a variety of special passenger movements of employees and officials of the U.P. Dave Seidel

The nation's newest shortline, the Virginia & Maryland Railroad, moves a freight just south of Parksley, Virginia. The railroad took over right-of-way from Conrail, and connects with the former owner at Pocomoke, Maryland. Edwin P. Patton

The Southern Railway's Southern Crescent *sideswiped a freight in Spencer, North Carolina, October 8, 1977. The E-units suffered heavy damage, and some of the passenger cars also sustained damage.* Mike Small

The Fiat Railcar which saw service on the MBTA is now being tested on the Rock Island. Seen at the 103rd Street Station, in the Beverly Hills section of Chicago's South Side. The RI crews have nicknamed the Italian speedster Ravioli Rocket. *Unit is scheduled to go to the Milwaukee RTA lines for testing in December.* Michael Abalos

Part of a new order of GE C-30-7s built for the Union Pacific is seen in the Norfolk & Western yard in Kansas City. Units were on their way to Omaha, Nebraska where they would receive lettering and final painting, as well as addition of radios. David Roberts

What would a D&H locomotive pulling NH coaches run by the B&M on Conrail for the Massachusetts Bay Transportation Authority look like? Like just what you see here. The MBTA has leased the Delaware & Hudson's Alco PAs for use with their commuter service. The units will not be repainted, the only change being the addition of cab signals. Running inbound from Farmingham to Boston, PA 18 is also pulling PA 19, which suffered the ignomy of a mechanical failure. Richard W. Story

Heading for service in West Virginia is a newly rebuilt Alco switcher. The RS-3 was refurbished at the General Electric plant in Cleveland, Ohio, for Oglebay Norton, an industrial firm. Frank Novak

SIAM'S AMERICAN & JAPANESE STEAMERS

By Ron Ziel Photos by the author

The Royal State Railway of Thailand boasts what is probably the cleanest, finest-maintained roster of steam locomotives in the entire world. Most of the Pacifics and 2-8-2's which handle the mainline services in the south and the Moguls which run west from Bangkok, over the famous Kwai River Bridge, roll through the rice paddies and past temples in shining splendor. Only some of the 2-6-0's and the ex-U.S. Army 2-8-2's assigned to switching service and local freights, may be allowed to lapse into a state of rusty or dusty demeanor. As in many poorer nations, the Thais respect big, expensive pieces of machinery, especially highly visible ones, so the engines are kept in superb condition.

The ancient kingdom of Siam is unique among the countries of southeast Asia and the southwestern Pacific;

except for [illegible] of World War II, when the Japanese occupied the entire [illegible] and has never been ruled by a colonial power. The motive power history of the RSR reflects this independence, for while nearby nations' rosters were heavily stocked with the products of the "mother countries'" builders (e.g.—Indochina with French engines, Indonesia with Dutch loks) the Thais have bought and been given engines from England, France, Germany, Holland, Japan, Switzerland and the United States.

By the 1970's, just American and Japanese locomotives remained on the roster, most being the biggest and most modern the RSR has had through the years. In fact, of several hundred steam locomotives in this decade, just a few Baldwin Pacifics built in the 1920's, represented pre-World War II Thai steam; the rest were all built during and after the war.

I chose the week in which 1973 became 1974 to visit Thailand and to photograph the fascinating meter-gauge engines of the RSR. My journey turned out to be a great success, thanks mainly to Badger Roberts, an internationally renowned British railway photographer who has covered steam action in much of the world through the simple expedient of managing farm-implement factories for an English company. He has selected several far-off countries, for stints of several years each, during which time he gets to befriend railway officials and photograph steam in all the surrounding countries. What a fringe benefit! Badger had a cozy two-room apartment in Bangkok and cherrily took a week off from work to guide me around the country. Had I given him a little more notice, he would have accompanied me to Burma, as well.

On December 31st we began by chasing Japanese Moguls up the River Kwai Line. "Might as well get the tourism out of the way first," Badger said. The greatest landmark on this line is, of course, the so-called Bridge Over the River Kwai, built by British Empire prisoners of war in 1942 and re-built into its present concrete and steel structure after that. The Japanese brought in forty-six of their standard C-56 class Moguls with distinctive slope-back tenders to work the new line during the war and the little 2-6-0's were still there, pulling four mixed trains across the bridge daily, in the mid-1970's!

A pair of ex-U.S.A. 2-8-2s double-head through the rice paddies near Huai Rong, January 4, 1974.

THAILAND BOASTS THE WORLD'S FINEST STEAM FLEET

We got both Moguls 738 and 744 crossing the notorious span and coincidentally, eleven days later, after my return from Burma, I got a night shot of the same two 2-6-0's at Thonburi Terminal in Bangkok, on my way back to the U.S.A.

Since the bridge is a world-famous tourist attraction, there are restaurants, pavilions and a steam locomotive on display nearby. The wood structure, about which the famous movie was made, only was used a few months—just long enough for the Japanese to build the permanent steel and concrete spans which still stand. This bridge was bombed by American B-24's of the 7th Bombardment Group (see Page 242 of my book, STEEL RAILS TO VICTORY). The bridge is actually over the Mae Khlong River, but the River Kwai (which forks in close by) is credited with the bridge!

We photographed more C-56 Moguls at Kanchanaburi and chased them along the line on the way back to Bangkok. For the rest of our RSR steam bash, it would be just two wheel arrangements: 4-6-2's and 2-8-2's, with two major classes of the latter and three of the former. There were a few plantation engines, but they weren't accessible at the time, so the mainline locos were the diet. I wasn't disappointed. The main classes were as follows:

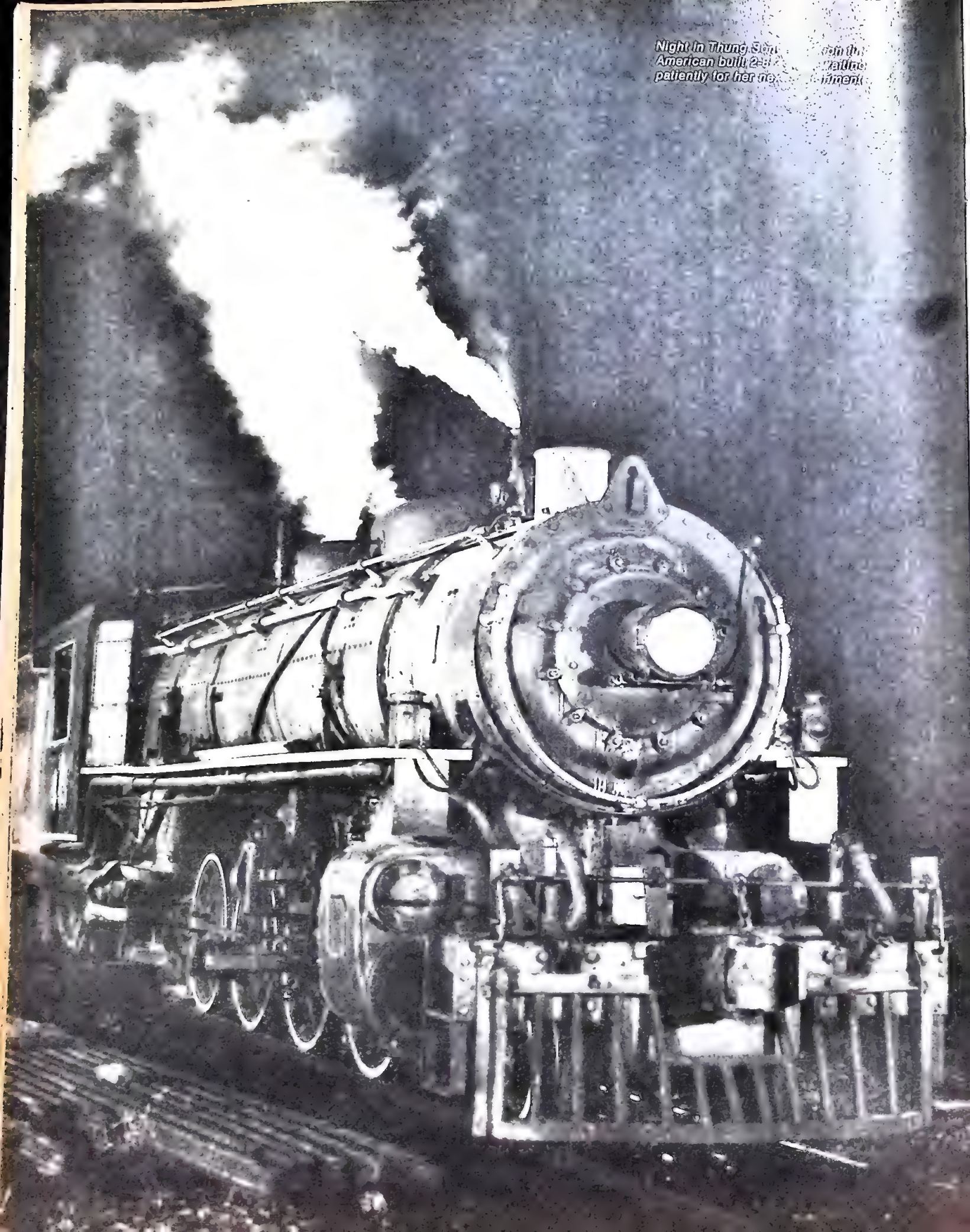
U.S. Army standard 2-8-2 locomotives which were built to augment the strategic Bengal & Assam Railway supply route through India to the China-Burma front. After the war, 68 were delivered to the RSR, all but two of which were still active as late as 1970. Since Americans refused to use the Japanese word "Mikado" for these 2-8-2's, they were named "MacArthurs." The Thais obligingly tell Western visitors that the class, numbered 380-477, were named for the great American General, "Mackatoor"!

The Japanese-built Mikados are called "Mickadoes" by the natives and consist of seventy locomotives, built in 1949-50 as war reparations by the Japan Association of Railway Industry. The Macks are all wood-burning, as are the Moguls, but the postwar Mikes and 4-6-2's are oil-fired. Nine nearly identical 4-6-2's, built during the war and numbered in the 280's, burn wood.

The older class of Pacifics, the 1920's Baldwins, were nearly extinct by the end of 1973. Indeed, only about five of the original 26 wood-burning 4-6-2's were still operable and none had run in over a month. At Badger's request, however, No. 232 was fired up especially for my benefit on January 3rd and replaced the usual Japanese Pacific on an afternoon local out of Thung Song Junction, which we caught in action about ten times on its run down to Trang.

The evening of December 31st, we headed south from Bangkok in Badger's car, parked at a small country station, caught the night train to the biggest steam center left in Thailand—and found that there were no sleeping car accommodations available! A proper balance of cajoling from Badger and bribery from me,. got us a clean, snug compartment within a few minutes and we bade each other "Happy New Year" and hit the sack.

New Year morning found us up at first light, photographing 4-6-2's ("Paseefeeks" as the Thai called them) and "Mackatoors" from the ves-



Night in Thung Si... ...on th...
American built 2-8... ...railroa...
patiently for her ne... ...rimen...

A Japanese Pacific pulls out of the station Thung Song Junction, while a Baldwin 4-6-2 waits at the right.

tibule at every station stop. By early morning, we were at the legendary Thung Song Junction, almost 600 miles from Bangkok; way in the southern part of Thailand, only a little over 100 miles from the Malaysian border. We quickly checked into a somewhat civilized hotel, had breakfast, hired a taxi and raced out of town to chase trains.

Thung Song was, indeed, a paradise of steam. Our express from Bangkok was the only diesel train around, leaving all the other mainline and the two branchline services, steam powered! We spent January 1st 1974 chasing oil-burning Japanese reparations 4-6-2's and 2-8-2's the 25 miles between Thung Song and Khao Chum Thong Junctions. There were passenger trains, freights and mixed trains.

First we chased the prototype "Mickadoe"—No. 901—with a long freight down to Khao Thong, getting several good action shots. We knew a mixed was due the other way and soon it arrived, pulled by gleaming 4-6-2 No. 823. Badger and I noticed splotches of pastel green and pink color on the smokebox front and the "elephant ear" deflectors. As the shining "Paseefeek" drifted by, we could see Thai sanskrit lettering on the front, but on the left deflector, in bold caps, we read HAPPY NEW YEAR, 1974! A Cut-out styrofoam goddess was part of the motif, dropping blossoms. The crew was obviously delighted by our presence and we hustled our taxi driver to get us to the station for close-ups. Apparently, we were the only non-native types around that day and the engine crewmen grinned proudly as we raved over their greeting.

A mainline passenger train, pulled by No. 845, was carded out ahead of 823 and Badger made smoke arrangements with both firemen before we went out ahead, to our first photo location. We got 845 twice, the second time on a short timber bridge near Ron Phibun. There we had to wait all of ten minutes before the spectacular 823 showed up, spewing an enormous plume of black smoke. We paced her, got more shots, then raced ahead, to get 920 on a freight, heading the other way, at Chong Khao. After the meet, we jumped our New Year baby again. We got good action of her meeting wood-burning 4-6-2 No. 289 at Sai Yai, then chased the 823 into Thung Song, where we spent the rest of the afternoon and part of the night, photographing the many locomotives in the yard. In little over an hour, we had gotten 4-6-2's and two 2-8-2's in a span of 25 miles, in a total of over 15 action scenes!

January 2nd was equally successful and Badger knew of a tunnel near Chung Khao. Our driver let us off where Badger indicated and we trudged our camera gear a half mile up a steep hill and along the tracks to the west portal. We were rewarded with a beautiful shot of our friend, No. 901, blasting out of the white-portaled tunnel with a burst of black smoke.

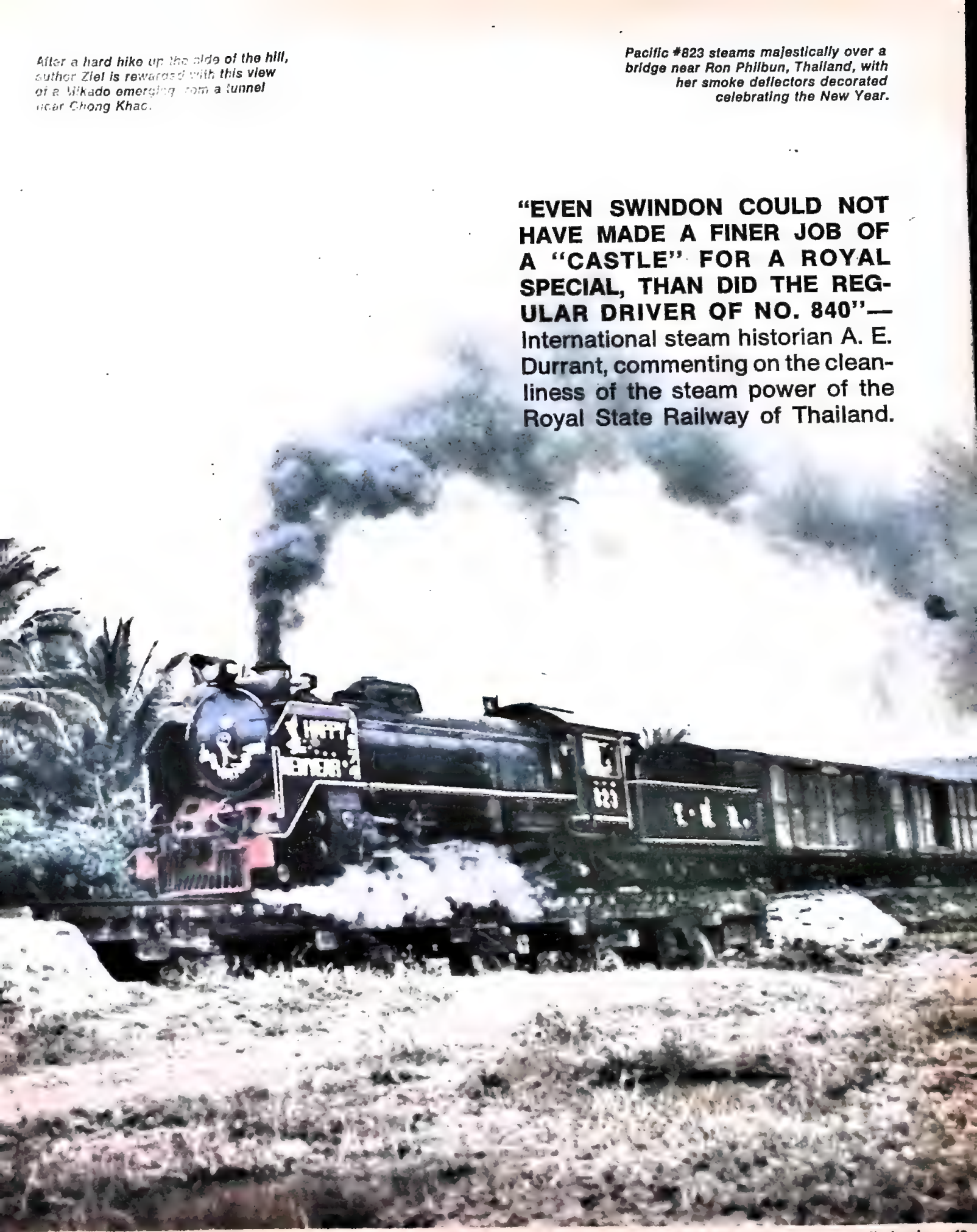
The next day, we had another driver and when Badger told him where to stop, so we could return to the tunnel, he began arguing in Thai and refused to let us out of the cab! Instead, he drove a few hundred yards further up the paved road, turned onto a dirt rut and pointed up the hill. "Tunnel," he said, then motioning to our cameras, he added "British, Germans, Americans, go tunnel. Good photo." Obviously, our new driver had handled railway enthusiast movements many times before and he knew the shortcuts!

After getting action of several trains at the east portal of the tunnel, we jumped several more trains on the way back to Thung Song and one of the highlights of our trip; the 1926 Baldwin 4-6-2. She was already cou-

After a hard hike up the side of the hill, author Ziel is rewarded with this view of a Mikado emerging from a tunnel near Chong Khae.

Pacific #823 steams majestically over a bridge near Ron Philbun, Thailand, with her smoke deflectors decorated celebrating the New Year.

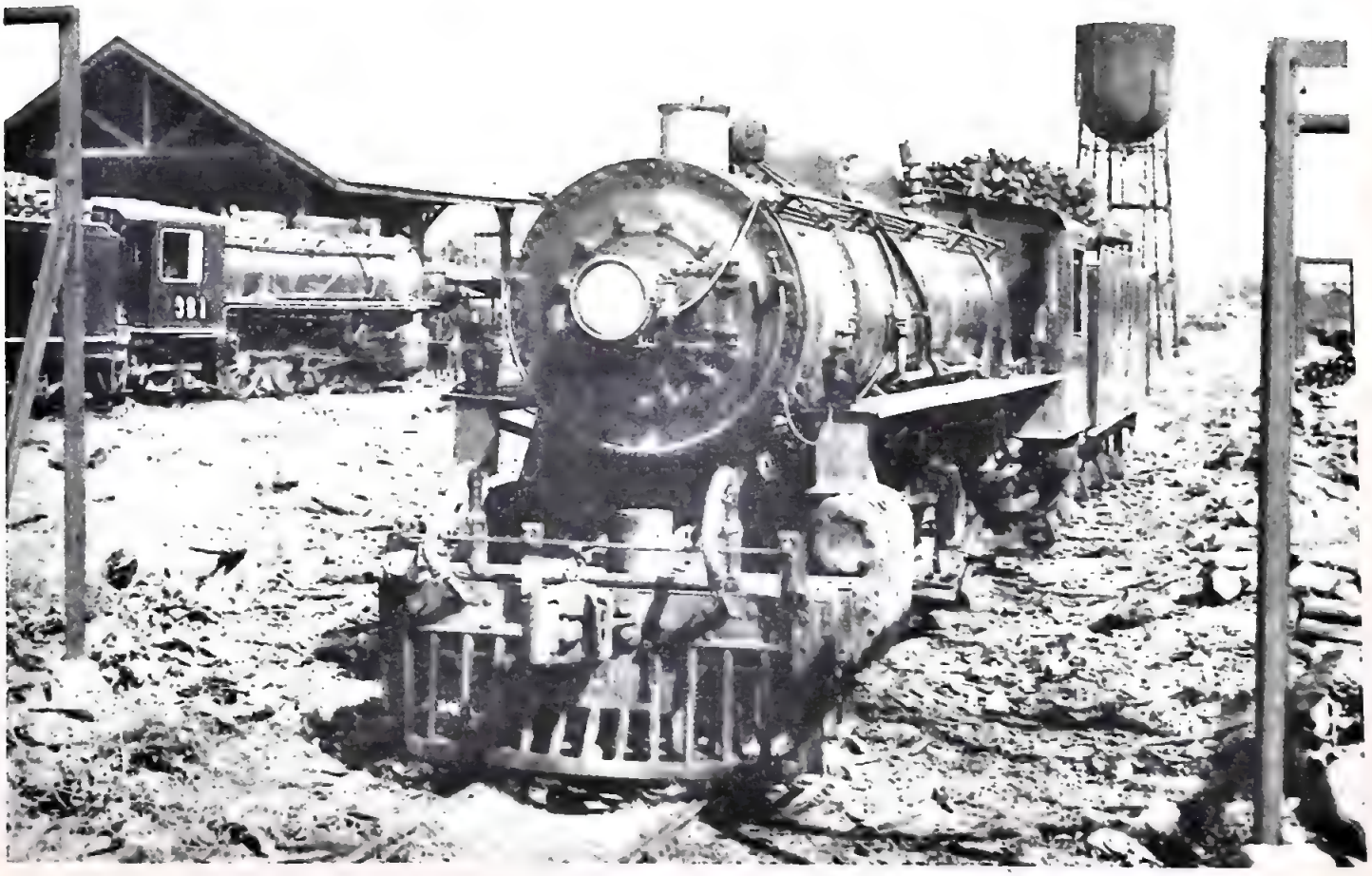
"EVEN SWINDON COULD NOT HAVE MADE A FINER JOB OF A "CASTLE" FOR A ROYAL SPECIAL, THAN DID THE REGULAR DRIVER OF NO. 840"— International steam historian A. E. Durrant, commenting on the cleanliness of the steam power of the Royal State Railway of Thailand.



A mixed train follows an immaculately maintained 4-6-2 near Chong Khao.

Pacific #232, built by Baldwin in 1926 pulls a second class train through the countryside.

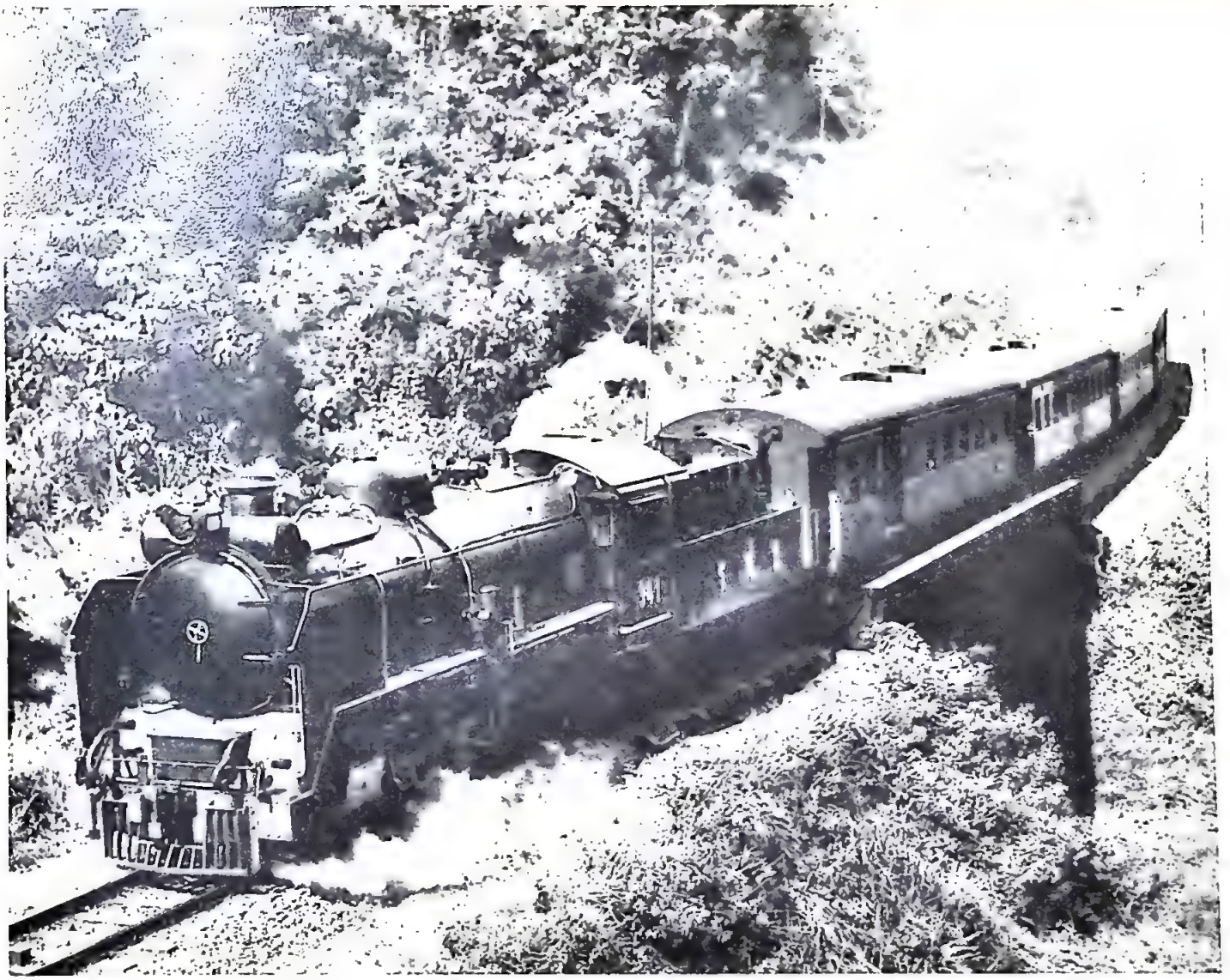
Mogul #738 crosses the famed "River Kwai" bridge over the Mae Khlong River. The new spans in the center replace a pair bombed out during WWII.



Sitting among the wood racks, for these are wood burning locomotives, is ex-U.S.A. 2-8-2 #381 and 440.

Former enemies side by side: Japanese 2-6-0s #744 and 738, with ex-U.S.A. 2-8-2 #409 at the Thonburi terminal.

A husky looking 2-6-0 heads for Bangkok after leaving the River Kwai bridge.



Five cars and a Japanese built Pacific break the quiet of a Thailand hillside near Chong Khao on New Year's Day, 1974.

pled onto the afternoon train which would head down the Ban Kantang Branch, when we appeared with our equipment. No. 232 was of a unique breed; a three-cylinder machine with Gresley Valve Gear. Badger grinned:

"When she's working, you're in for a treat."

As she approached our first photo spot, I could hear what the fuss was about. Gresley gear was rare indeed on an American locomotive and I always found three-cylinder engines to be rather mushy-sounding, having heard many of them in Germany. But the combination of three cylinders and Gresley Gear on No. 232 was indescribable! Loping along at 30 mph, she sounded like a Pennsy K-4 at 70 with valve motion all off synchronization. What a racket—and what a recording No. 232 would have made! I have never heard a steam engine match that, before or since and I soaked it up, all afternoon.

On the 4th we headed back toward Badger's car and Bangkok. At Wang Pong, we saw the only Mogul south of the capital, No. 731. Standing in the yard was a Pacific that matched the splendor of No. 823 and what had been the cleanest loco to date, No. 848. No. 825 stood by the station, about to head south with a mixed consist. She was painted in Brunswick Green—nearly black—with the usual red pilot beam. Her unique feature was that the inside of the smoke deflectors were a brilliant red. With her brass capped stack and white cab roof, the 825 made a striking color scene as she left Wang Pong.

January 5th was one of those rare days in which I managed to get action photos of steam in two countries. At dawn, I got two "Mackatoors" and a "Mickadoe," before Badger drove me to the airport. Upon landing in Burma, I checked into a hotel just 100 yards from the dilapidated little terminal from which little 2-6-4T engines were dispatched for the Rangoon commuter service. That afternoon, I got nine of them in action, plus a YC class Pacific. But Burma is another story. January 10th, was the same situation—in reverse, with the really unique (perhaps unheard of in the art of railway photography) situation of getting the same class of locomotive, under steam, on two separate railway systems, in two capital cities, hundreds of miles apart. The ex-U.S. Army 2-8-2's wound up in Burma as well as Thailand and I got No. 1037 at the roundhouse in Rangoon that morning. At 10 o'clock that evening, Badger and I got night photos of a pair of the same locos—Nos. 422 and 431—back in Bangkok!

After six weeks of chasing steam around the Far East, I was ready to leave Bangkok for New York—via Tokyo and Alaska—the morning of January 11th. Once again, Badger and I were out at dawn. We got the morning commuter rush — two "Mackatoors" and a "Mickadoe"—and we left for the airport and my PanAm flight back across the Pacific.

CLUB CARS OF THE LIMITED

THE NORTHERN PACIFIC'S SLEEPER OBSERVATIONS STILL SURVIVE

By Ron Palmquist

On April 29, 1900, the Northern Pacific Railway introduced the *North Coast Limited* to the public traveling between the twin cities of Minneapolis and St. Paul in Minnesota and the great Pacific Northwest.

The Limited was "Varnish" in the truest sense of the word, its consist headed by steam and trailed by open platform observation cars for lounging and recreation while making the trip through the plains of Minnesota and the Dakotas and into the high country of Montana, Idaho and Washington.

Yellowstone National Park was the big attraction for vacationers in the early days of the Limited, which began its career as a summer-only train. Eventually, the NP scheduled the North Coast Limited year-'round, extending its eastern-most terminal from the Twin Cities to Chicago, first via the Chicago Northwestern Railway and then on the track of the Chicago, Burlington & Quincy.

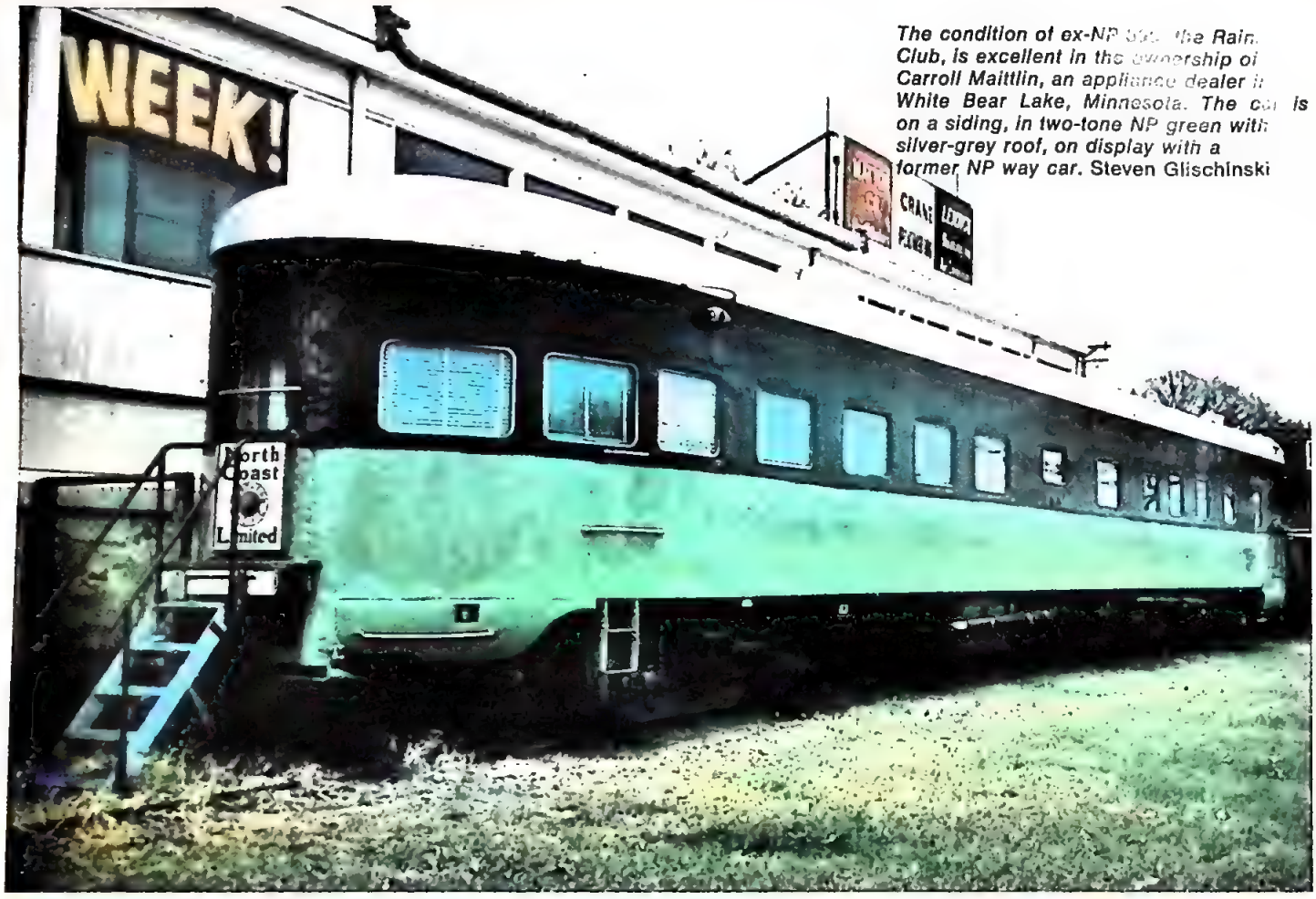
Long, heavyweight observation cars, without vestibules, were traditional on the Limited. So, in 1948, it was true to form that the Northern Pacific ordered modern observation-sleeper-lounge equipment to replace aging steam-powered cars.

The Pullman-Standard Company was selected to build an even half-dozen sets of streamlined, lightweight cars to update the North Coast Limited trains which traveled from Chicago to Seattle, via Butte, Montana. It was a nearly $10-million investment for the NP, which took delivery of 78 of the 90 car order; 10 cars were owned by the Burlington and two cars by the Spokane, Portland and Seattle Railroad, which operated the Chicago to Minneapolis-St. Paul and Pasco, Washington to Portland, Oregon portions of the 2300 mile, 48-hour run, respectively.

The six cars that brought up the rear of the NP's pride and joy were sleeper-lounge-observation cars, built to Pullman plan 4120, lot 6781, and were put into service in June and July of 1948.

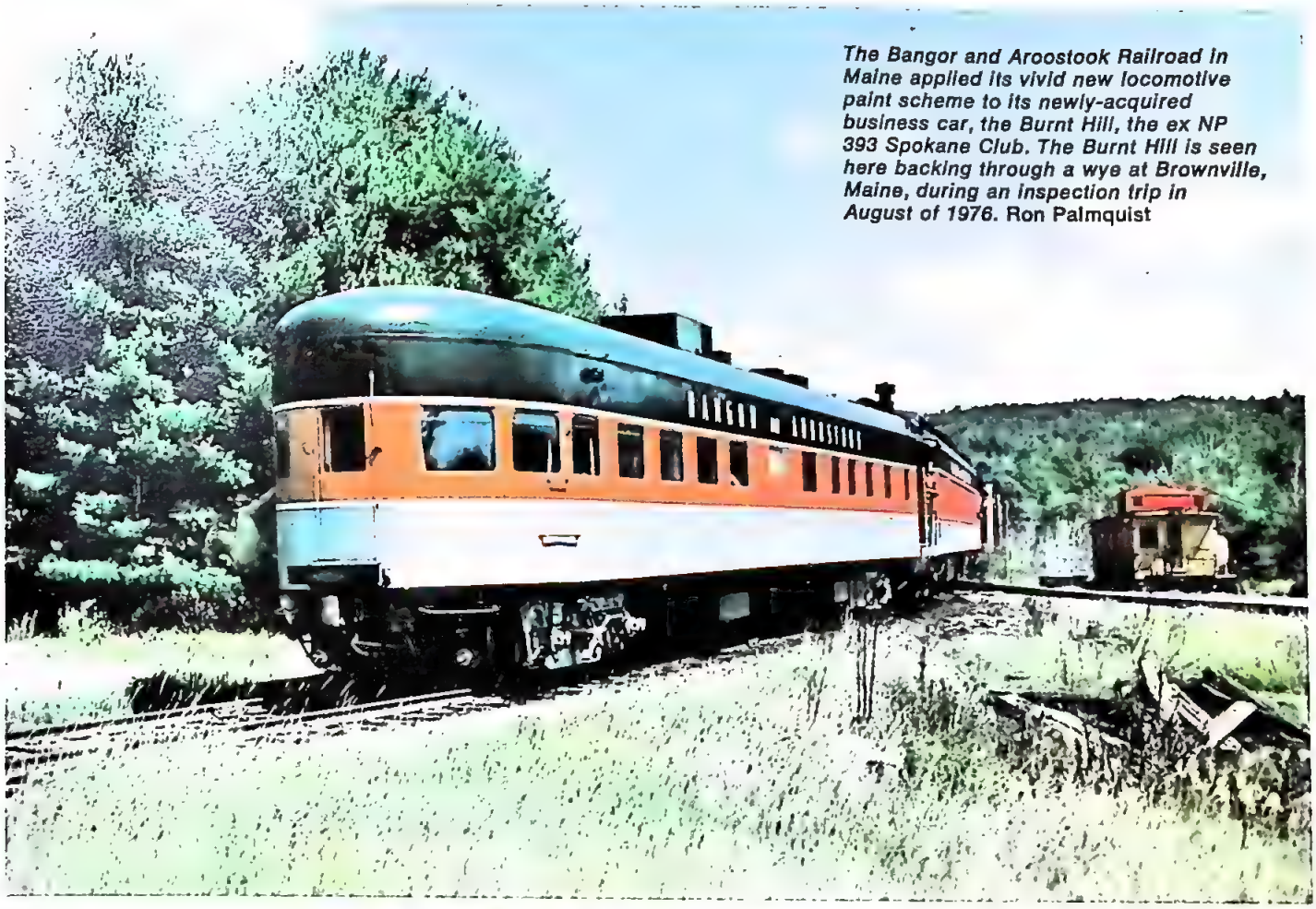
Passengers who boarded the *North*

The passengers assigned the four double bedrooms and one compartment of car 390, the Rainier Club, are getting ready for breakfast as the North Coast Limited makes an east bound stop at Missoula, Montana. The fresh from the factory car is seen in its 1948 colors. Burlington Northern



The condition of ex-NP Spo[kane] the Rain[ier] Club, is excellent in the ownership of Carroll Maittlin, an appliance dealer in White Bear Lake, Minnesota. The car is on a siding, in two-tone NP green with silver-grey roof, on display with a former NP way car. Steven Glischinski

Richard Snyder of Lakeville, Connecticut, purchased the Spokane Club, NP 393, in 1969, and renamed it the Deep Creek. The Deep Creek is seen here at W. Bethel, Maine, on a fall foliage excursion sponsored by the 470 Railroad Club of Portland. The Deep Creek has been sold to the Bangor and Aroostook Railroad and has been renamed the Burnt Hill. Ron Palmquist



The Bangor and Aroostook Railroad in Maine applied its vivid new locomotive paint scheme to its newly-acquired business car, the Burnt Hill, the ex NP 393 Spokane Club. The Burnt Hill is seen here backing through a wye at Brownville, Maine, during an inspection trip in August of 1976. Ron Palmquist

"The 48 Company" was formed to purchase the NP 394, Montana Club, for railfan excursions. It was renamed the Twin Cities Club, and is seen in this night photo in Superior, Wisconsin, on May 31, 1975, on Amtrak's "Arrowhead." Steven Glischinski

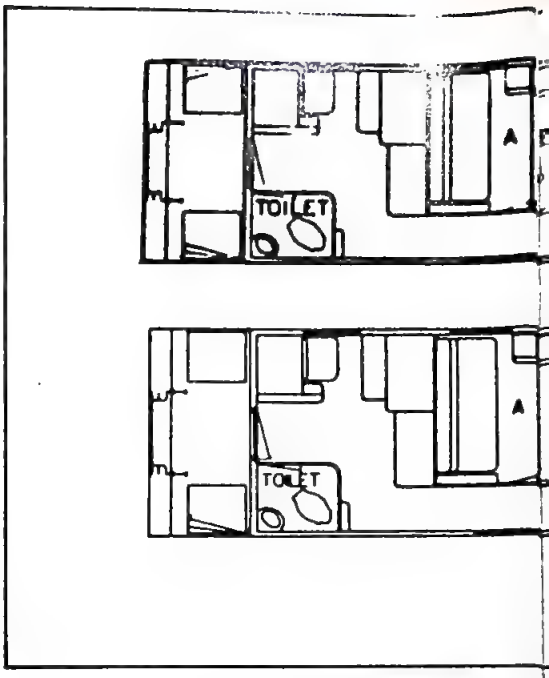
Coast Limited at Union Station in Chicago or at King Street Station in Seattle found the accommodations sumptuous. "One of the world's extra fine trains," the NP called it.

Each of the cars contained one compartment and four double bedrooms, in addition to a buffet and a spacious observation-lounge. Originally, each car was tastefully decorated with overstuffed chairs and sofas, writing desk, radio, magazine rack and three rearward facing seats. There were two and four seat tables at which one could sip a beverage or sample a sandwich while enjoying convivial conservation and, at times, glorious countryside.

The North Coast sleeper-observations were truly "Club" cars. And, they were so named: NP 390, the Rainier Club; NP 391, the Arlington Club; NP 392, the Tacoma Club; NP 393, the Spokane Club; NP 394, the Montana Club; and, CB&Q 483, the Minneapolis Club.

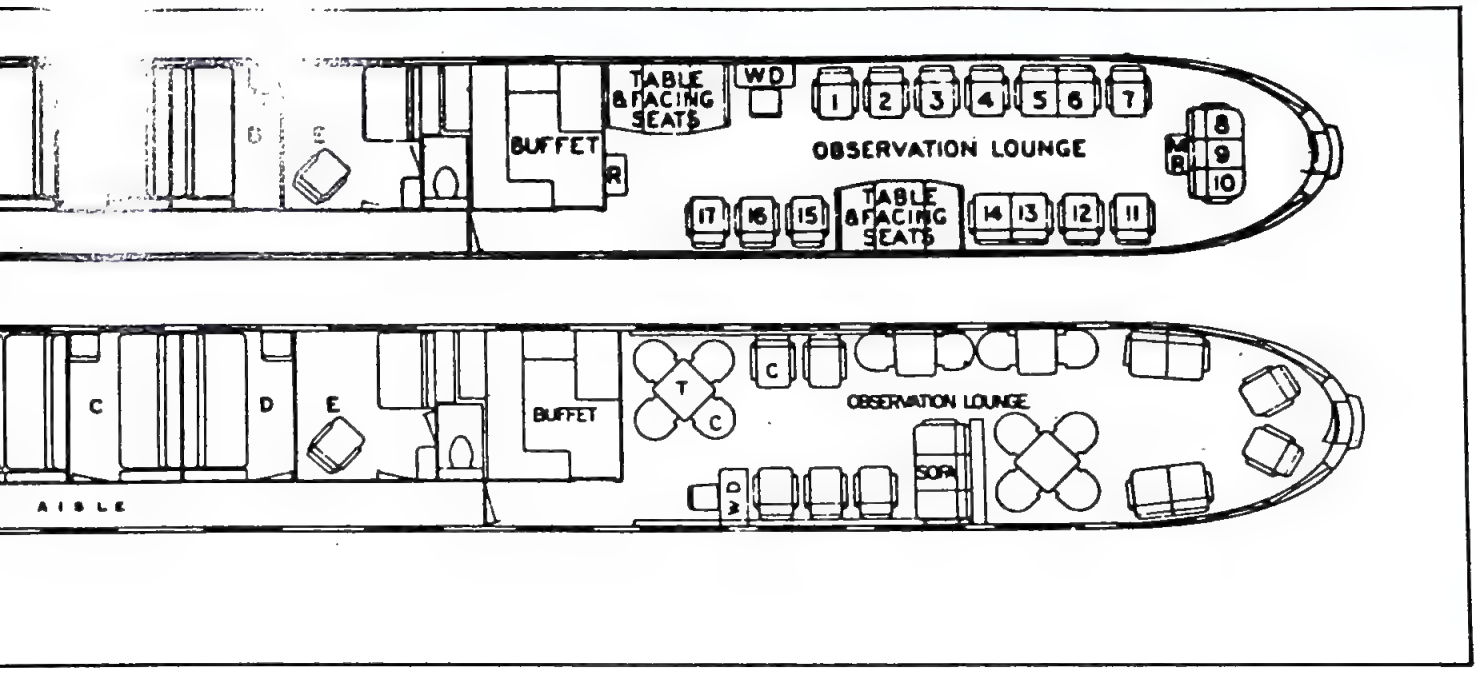
The "Club" names remained on the car sides, beneath the belt rail, until 1954. That's when the NP introduced Vista-Domes to the traveling public and it was decided to call attention to the train and its new, high-riding feature by hiring designer Raymond Loewy to completely refurbish the Limited.

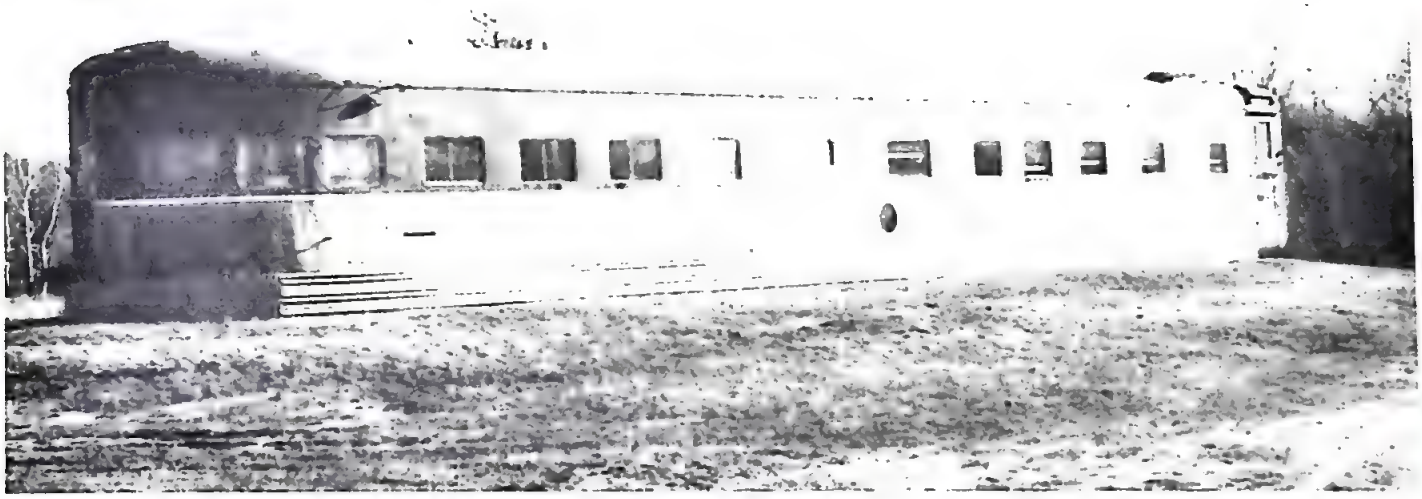
It was Loewy's decision to remove the car names and in their place put the NP's colorful "Monad" logo and the slogan, "Route of the Vista-Dome North Coast Limited." A simplified two-tone green color scheme—dark on top, light on the bottom, separated by a white stripe—was the Loewy Limited. Eventually, all Northern Pacific lightweight passenger equipment received the Loewy paint job and the Vist-Dome slogan was adopted system-wide. It even showed up on the sides

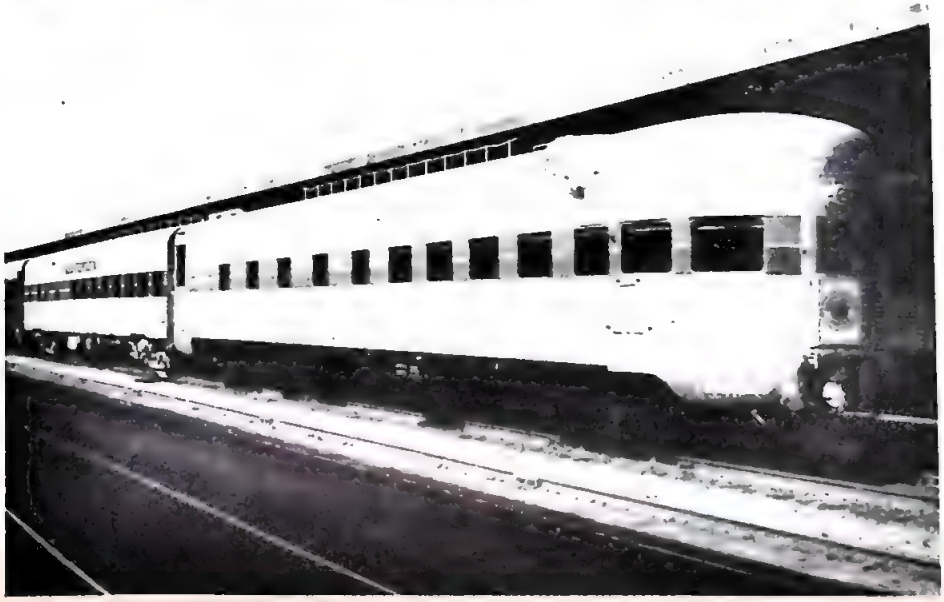


Widely-known designer Raymond Loewy was retained by the Northern Pacific Railway to update the North Coast Limited. *Car names were removed from beneath the windows and replaced with the Monad symbol. Here the train pauses at Livingston, Montana, gateway to Yellowstone National Park, with the Arlington Club just plain car 391.* Burlington Northern

Designer Raymond Loewy was responsible for a new paint scheme applied to all North Coast Limited *cars when Vista Dome equipment was added in 1952. The Tacoma Club was simply car 392 when the round-end observation brought up the rear of the train, #26, eastbound at Aurora, Illinois, in 1965.* Gerald V. Appleman







A small real estate company in Soderville, Minnesota, purchased the Arlington Club from the NP to use as an office. However, local zoning ordinances prohibited that. And, so, car 391 now is propped up on cement blocks, off its trucks, with a sheet metal skirt. The car has been vandalized and has been allowed to become derelict. (April 1, 1976). Steven Glischinski

Ex NP-392, the Tacoma Club, now the Hulham, still carries the North Coast Limited *drumhead while in charter service but, has been repainted to match Amtrak colors. The car was recently sold to Gordon Ingram, and is stored on a siding in the City of Commerce, a suburb of Los Angeles.* Ron Palmquist collection

Here, the Montana Club, car 394, has just been delivered from the factory and is set to replace the open-platform, heavyweight observation cars that were in service on the Limited since its first run in 1900. Burlington Northern

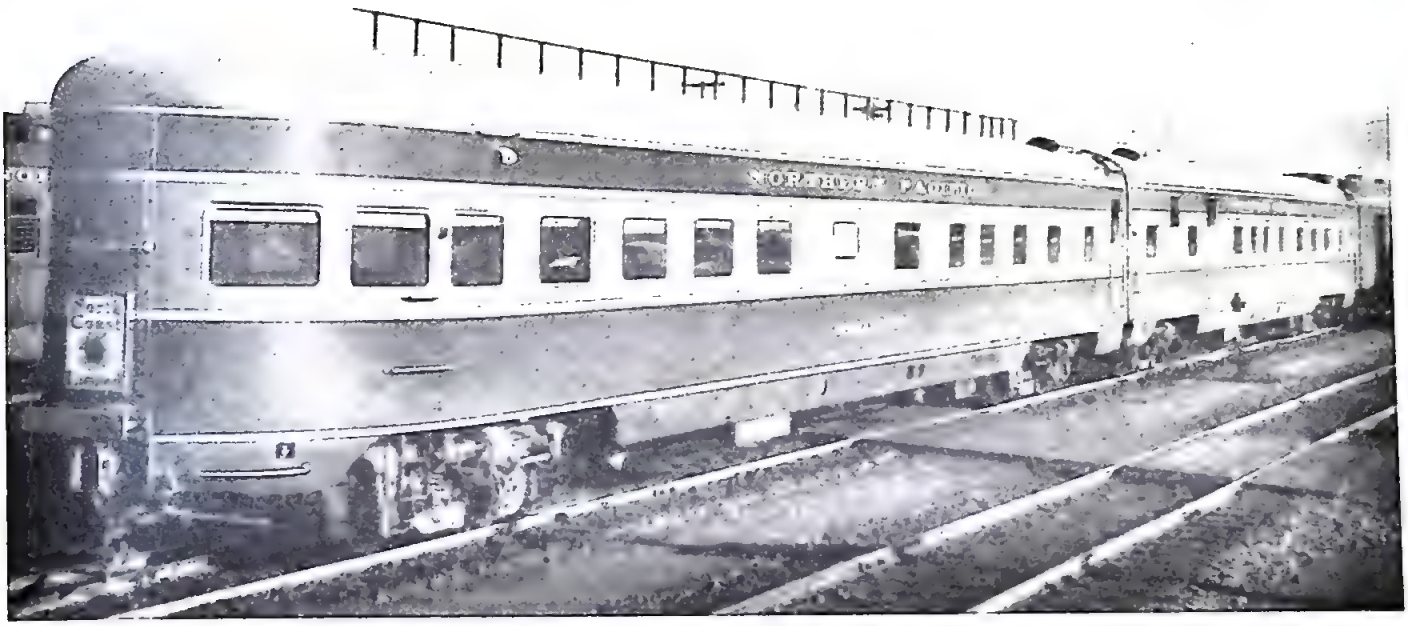
The original interiors were luxurious for transcontinental passengers of the North Coast Limited. *The cars, in addition to sleeping space in four double bedrooms and one compartment, featured a radio, writing desk, buffet service, easy chairs and sofas.*
Burlington Northern

of freight cars.

Raymond Loewy also was given a free hand in redecorating the interior of the Limited's cars, including the observation-lounges. He changed the colors and lighting, added glass panels here and there, removed the three seats that faced rearwards, pulled out the radio and magazine rack, moved the writing desk to the outside wall near the companionway, and, replaced the Pullman-designed floor plan with the two 4-seat tables and two 2-seat tables. In all, the observation-lounge area, with sofas and chairs, some upholstered in vinyl, had seating capacity for 25 passengers. That was one more than before the Loewy restyling job.

Other technical dimensions of the car remained unchanged. Each weighed 125,600 pounds, inside length was 78-feet, 6⅞ inches with a four-foot vestibule. Overall length was 85-feet over buffers; the car's width was 10-feet over the sills.

At the time of the Loewy face-lifting, the NP reduced the number of *North Coast Limited* trains to five. Car 483, CB&Q's Minneapolis Club, was put in service on the Burlington, which painted it silver for use on the line's



King Street Station, Seattle, is the destination of the Spokane Club, fresh out of the Pullman Co. factory. NP #393 was one of six round-end observation cars included in a nearly $10 million dollar order of new, streamlined lightweight equipment to replace heavyweight cars on the Chicago to Seattle train.
Burlingon Northern

Zephyr and other trains as a coach-lounge and crew dormitory car.

The remaining Pullman-built, round-end, smooth-side sleeper observation cars stayed a part of the Limited's consist until 1968 when they were removed from service and replaced with dome-sleeper cars that didn't require turning at eastern and western terminals. And so, a tradition begun with heavyweight, open-platform cars at the turn of the century ended. An economic decision made in an effort to keep the *North Coast Limited* running doomed the lightweight round-end observation cars to an unsure future.

Railroad records reveal that the five cars had been tentatively earmarked for dismantling. However, all, including the Burlington car, have survived into the Amtrak era and all but one are in serviceable condition.

Car 390, the Rainier Club, is owned by Carroll Mattlin of White Bear Lake, Minnesota. He's a heating and air conditioning contractor there, and, according to W. A. McKenzie, Public Relations Manager for the Burlington-Northern, "the car has been maintained in virtually mint condition since its acquisition from the company. They did remove a bedroom to install a kitchen, and the car is used, not infrequently, on excursion runs." Sometimes it is used for parties at its berth beside the Mattlin company shops in White Bear Lake, next to a preserved NP caboose. "It looks great," McKenzie says.

Of the six "Club" series cars, only the Arlington Club, car 391, has been allowed to become derelict, where it sits, truckless, on concrete blocks, with a painted metal skirt. It stands a lonely vigil in a weed patch off state highway 65 near Soderville, Minnesota, in a rural area just north of the Twin Cities. "A small real estate firm parked it there," states McKenzie. "However, before the realtors received clearances from the local zoning people, the car was vandalized beyond description. Thus, the firm apparently dropped the original plan and has made no attempt to salvage the car."

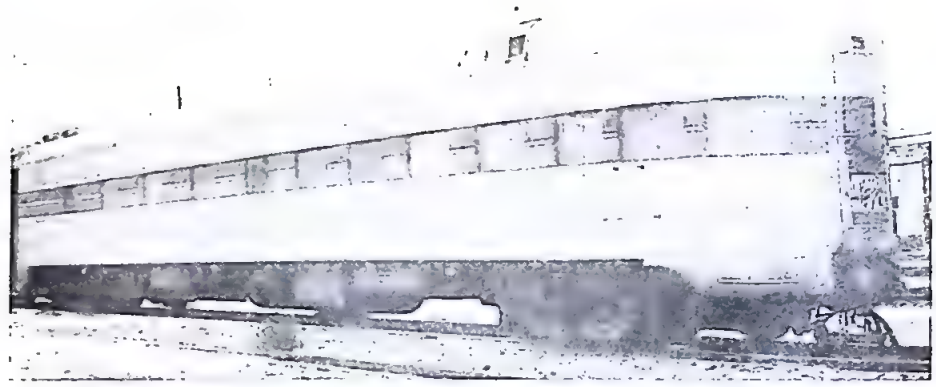
Amtrak's colors have been applied to car 392, the Tacoma Club, one of two ex-NP lightweights which has seen wide excursion use since leaving railroad ownership. The car has been renamed "The Hulham" and is now owned by Gordon Ingram of San Diego, California. "I purchased the Hulham last May (1976) from Ken Hultgren and Ed Cheetham," Ingram says. The name "Hulham" was created from the names *Hul*tgren and Chee*tham*, who had owned the car since it was acquired from the NP four years earlier. It was refurbished by the Solano Rail Car shops in Oroville, California. But, Ingram says the Hulham's interior is "original" as rebuilt by the railroad in 1954. He purchased the car for personal use and for leasing.

It was while under the ownership of Hultgren and Cheetham that the former Tacoma Club saw extensive use under lease to Amtrak for its Las Vegas gambling train, and, on one occasion, it was rented by entertainer Frank Sinatra for a one-way trip to Chicago behind the *Southwest Limited*..

Hulham Enterprises, Inc., of Los Angeles, advertised their car as "one of the finest completely restored and renovated railroad passenger cars in the nation." New owner Ingram, a former Naval Aviator who loves planes and trains, describes the Hulham's condition as "superb." While outfitted in Amtrak colors with a red safety light added above the rear door, the Hulham still wears the North Coast Limited drumhead in honor of the streamliner it once served.

"In January 1973," recalls Sam Girdler of the Solano Rail Car Co., "I

Decked out in Amtrak colors, car SOLX 483, the Minneapolis Club, is the former CB&Q 483 of the same name. The car had three earlier paint schemes; the original NP 1948 livery, the Loewy design and start CB&Q silver after it was removed from revenue service. At that time, in early 1967, it was lettered "Burlington" and was used for a crew dormitory car. Ron Palmquist collection



When designer Raymond Loewy re-styled the exterior of the North Coast Limited, *he also applied his touch to the interior of the train cars as well. New colors, some indirect lighting and the addition of tables and arm chairs plus the removal of some of the overstuffed arm chairs. Also added was a glass panel midway in the observation-lounge section of the cars. Removed during refurbishing was a set of three rearward facing seats at the end of the car, radio and magazine rack.*
Burlington Northern

saw the CB&Q 483 in St. Paul Union Station. It was in a sorry state with broken windows, vandalized and stripped." Girdler managed to buy the car for $7,500 delivered to California. It was completely rebuilt and the Minneapolis Club was put back in service in June of 1974.

"We use it for private parties on regular Amtrak trains to Seattle and Los Angeles,' Girdler explains. "But the most popular is to Reno, Nevada, where we park and sleep on the private SP car track with full service including telephone." The Minneapolis Club, renumbered SOLX 483, is "completely original" and, according to Girdler, is still going strong.

Downeast Maine is the home of NP 393, the Spokane Club, which is being used as a business car by the Bangor and Aroostock Railroad. It's BAR number 5 and has been renamed Burnt Hill in honor of the Canadian fishing camp of F. C. "Buck" Dumaine, the railroad's chief executive officer.

The Burnt Hill was acquired in 1976 and has been used extensively by the northern Maine line. The BAR applied dazzling colors to the car, using a paint scheme first applied to its locomotive fleet. The Burnt Hill is striking in orange, black, grey and white, each color separated by a white stripe. The BAR made a few interior changes, including new carpeting and paneling and installed new air conditioning units on the roof which prominently change the original streamlined appearance.

The railroad displayed the Burnt Hill, along with business car 1, the Schoodic and rider car 3, a former Canadian Pacific baggage car, all in the new BAR paint scheme, in the consist of a special inspection train which carried railroad directors, officials and the media on a tour of the line last August.

NP 393, prior to its BAR ownership, had been bought from the Northern Pacific by Richard Snyder of Lakeville, Connecticut. The car, purchased by Snyder in 1969, was renamed the Deep Creek, which is a small fishing stream in Montana. It was painted a deep green with gold stripes and lettering by the BAR at its shops in Derby, Maine. A Connecticut contractor and former Amtrak official, Snyder said the car was given a good interior cleaning and "We made a few mechanical changes so that it could operate more or less without train line facilities." And, a small hot water heater was added for personal needs.

The Deep Creek was used, prior to painting, for a family trip from Canaan, Connecticut, to South Station, Boston. And, while owned by Snyder, the former Spokane Club was included in the consist of the fall foliage excursion trains operated by the 470 Railroad Club of Portland, Maine, in 1973 and 1974. It was while the Deep Creek was in storage at the BAR's Derby shops that Mr. Dumaine approached Snyder with the idea of purchasing the car. (Snyder loaned the Deep

The drumhead, North Coast Limited, *didn't change when Raymond Loewy applied his new color design to the cars of the Vista-Dome train in 1954.* Burlington Northern

Creek to the BAR for several short business trips prior to making the sale last year.)

Former *North Coast Limited* sleeper-observation Montana Club, ex NP 394, is located in Aurora, Illinois, beautifully restored in its original 1954 color scheme. The car was acquired by Emery Dillon of Aurora from the 48 Company of St. Paul, Minnesota. The restoration work was done at the Port Huron, Michigan shops of the Grand Trunk Western. "They did a beautiful job," commented the Spike and Tie, the publication of the Blackhawk Chapter of the National Railway Historical Society.

The 48 Company, which used the Montana Club on excursion trips out of the Twin Cities area, covered the Loewy paint scheme with a dark green top and bright red bottom, separated by a reflectorized white belt rail stripe, and black trucks and underframe. The Loewy design was reapplied to the car during the refurbishing job at the GTW shops, replacing a design termed "really ugly" by its new owner and his friends in the NRHS.

The GTW crew, in addition to the paint job, banged out dents, puttied up chips and torched out rusted metal replacing the old with new—". . . a really first class job," according to David Briggs of the Blackhawk NRHS chapter. The car, complete with *North Coast Limited* drumhead, is stored in Aurora, Illinois, for future use.

The *North Coast Limited* is a memory. Gone are the sleek, streamlined trains, with and without round-end observation cars. Gone are the Pullman attendants who met the needs of the train passengers and their families, who read magazines in real leather binders, played games at the car's tables and who made mealtime dining car reservations from the privacy of their bedrooms or compartment. Train music and announcements of passing points of interest are just memories, too.

But, the Club series, round end sleeper-lounge-observation cars of the Limited are still with us, from coast to coast, a constant reminder of what once was and never will be again.

SLEEPER OBSERVATION LOUNGE CARS FOR "NORTH COAST LIMITED": BUILDER, PULLMAN-STANDARD MFG. CO.

Northern Pacific Sleeper Observation PS 1948, Plan 4120, lot 6781 — 5 bedrooms, buffet and observation lounge seating 25.

Number—Name

NP 390—Rainer Club
Sold to Carroll Maittlin, White Bear Lake, Minnesota, 1968. One bedroom has been removed to install a new kitchen. The car, in Loewy paint scheme, on siding and has been used on excursions.

NP 391—Arlington Club
Sold to real estate company in Soderville, Minnesota, 1968. Off trucks on concrete blocks with metal "skirt" painted to match NP two-tone green. Is in vandalized and derelict condition.

NP 392—Tacoma Club
Sold to Ed Cheetham and Ken Hultgren, Los Angeles, California, 1972. Rebuilt by Solano Car Co., Oroville, California, repainted Amtrak color scheme and renamed "Hulham." Sold to Gordon Ingram, San Diego, California, 1976. In storage at City of Commerce, California, for excursion use.

NP 393—Spokane Club
Sold to Richard Snyder, Lakeville, Connecticut, 1969. Repainted dark green with yellow lettering and striping, renamed "Deep Creek." Sold to Bangor & Aroostook RR, 1976, repainted black, orange and grey with white lettering and color separation stripes. Renamed "Burnt Hill" and renumbered, BAR business car 5. In storage at railroad shops in Derby, Maine, and in frequent use on inspection trips and other company business.

NP 394—Montana Club
Sold to "The 48 Company," 1969, repainted green and red. Was renamed "Twin Cities Club" and used on excursions. Sold to Emery Dillion, Aurora, Illinois, 1976. Refurbished and repainted original 1948 color scheme by Grand Trunk Western RR at Port Huron, Michigan, numbered car 394 and renamed "Montana Club." On display on siding in Aurora, Illinois.

CB&Q 483—Minneapolis Club
Repainted Burlington silver color and used as crew dormitory and business car on Zephyr and other trains. Sold to Solano Car Co., Oroville, California, 1973. Repainted Amtrak color scheme, with name "Minneapolis Club" retained. Numbered SOLX 483. Used in frequent excursion train service.

The A&W main piece of motive power, a GE 70 tonner, bought new in 1950, waits the call to duty behind the shortline's headquarters building.

An 80-ton ex-military Porter center cab serves as backup engine for times when the GE conks out. The Porter, one of only seven of this model built, was bought in March of 1967 from the Durham & Southern which found the engine lacking enough muscle for its purposes.

DISTANCE ISN'T EVERYTHING

By Ernest H. Robl

Photos by the author except as noted

The history of railroading is filled with stories of men who bit off more than they could chew—men whose vision was greater than their cash reserves.

Some of the best examples of this visionary overreach are the transcontinental names given some railroads that barely get out of their own back yards.

Wandering along three miles of battered track that twist their way through the back streets of Sanford, N.C., is the right-of-way of the Atlantic and Western. It's a line that's never seen the Atlantic and never gotten west of its home town.

It did stretch a total of 24 miles to Lillington, east of Sanford.

Sanforization is a patented process to keep clothes from shrinking. Unfortunately for the A&W, no such process was ever invented for railroads.

But despite being "Sanforized" down to its present size, despite the rotting ties, despite the years in receivership, the A&W is not only still around, but in some ways more alive than it appears to have any right to be.

THE THREE MILE LONG ATLANTIC AND WESTERN KEEPS ITS CUSTOMERS HAPPY

Not too many three-mile lines own two pieces of motive power and a fleet of box cars—and an industrial park.

In some ways, Sanford is the typical all-American railroad town—a town that grew because it was the site of a railroad junction. Even today there are three railroads in Sanford, with a population of only 12,000. The Seaboard Coast Line has a beautifully ballasted 132-pound welded rail mainline (Raleigh Division) and a spur serving a number of industries; the Southern has a branch into the town from Greensboro; the former Norfolk Southern (now Southern) main passes within a dozen miles of the town limits.

So, a third railroad, especially one whose right-of-way has seen better days, is one railroad too many in Sanford. Wrong.

The customers on the A&W don't care for a pretty right-of-way; they care about service. And within a couple of hours, sometimes even within minutes of the time an SCL or Southern local drops off a car for an A&W customer, that line cranks up one of its

Before taking the cars picked up at the interchange down the hill, engineer MacNeil checks out his consist and takes care of some paperwork.

As engineer MacNeil pulls the throttle back to idle, the flagman sprints ahead to give protection at another unsignalled road crossing.

two diesels and delivers it where the customer wants it.

Sanford is still very much the railroad town that it started out as.

Railroad House, one of the city's oldest structures and now the home of the Chamber of Commerce; the old depot, now home of a social service agency; and an A&W number 12, a 2-8-0 Baldwin of 1911 vintage, are the three best known landmarks. The only thing that's missing is any sign of an industry that briefly put Sanford into the international railway limelight.

A look at today's A&W doesn't give any indication that the road once gave birth to the Edwards Railway Motor Car Co., which produced gas-powered rail buses for roads all over the United States and a handful of South American countries as well.

For a railroad that, after 65 years of operation, declared in 1969 that it had never paid a dividend, it's history is nothing short of amazing; what's even more amazing is that that history is one of the best documented of any American shortline.

The people that ran the A&W through the years saved practically everything in the way of paperwork (for evidence in bankruptcy court, perhaps?) and much of that material is now housed at Duke University in Durham, N.C. Perkins Library at Duke has a total of 46,600 items and 214 volumes in its Atlantic and Western collection.

The collection, consisting mostly of office files, including much material relating to the American Short Line Railroad Association is housed in the manuscript department and is accessible through that department's catalog.

The A&W was chartered in 1899 to build 70 miles of track between Sanford and Goldsboro, N.C. Like many lines that wandered in and out of financial trouble throughout their history, the name changed slightly a couple of times.

At first it was the Atlantic and Western Railroad Co.; in 1927 after going through receivership and reorganization, it became the Atlantic and Western Railway Co.; in 1969 the railroad was merged into the Atlantic and Western Corp.

Even in the beginning, things didn't quite work out as the organizers planned. By 1903 only two miles of track to Jonesboro had been laid; the next two years saw only slightly more progress, with the railhead six miles further east at Broadway. During the next eight years, the final 16 miles to Lillington were built.

Until 1920, the chief freight on the line was lumber.

A major problem during the early years was that the principal investors were all strangers to the area; some lived in New York, others in foreign countries. They failed to realize that in the largely agricultural area there just wasn't enough freight to sustain a railroad.

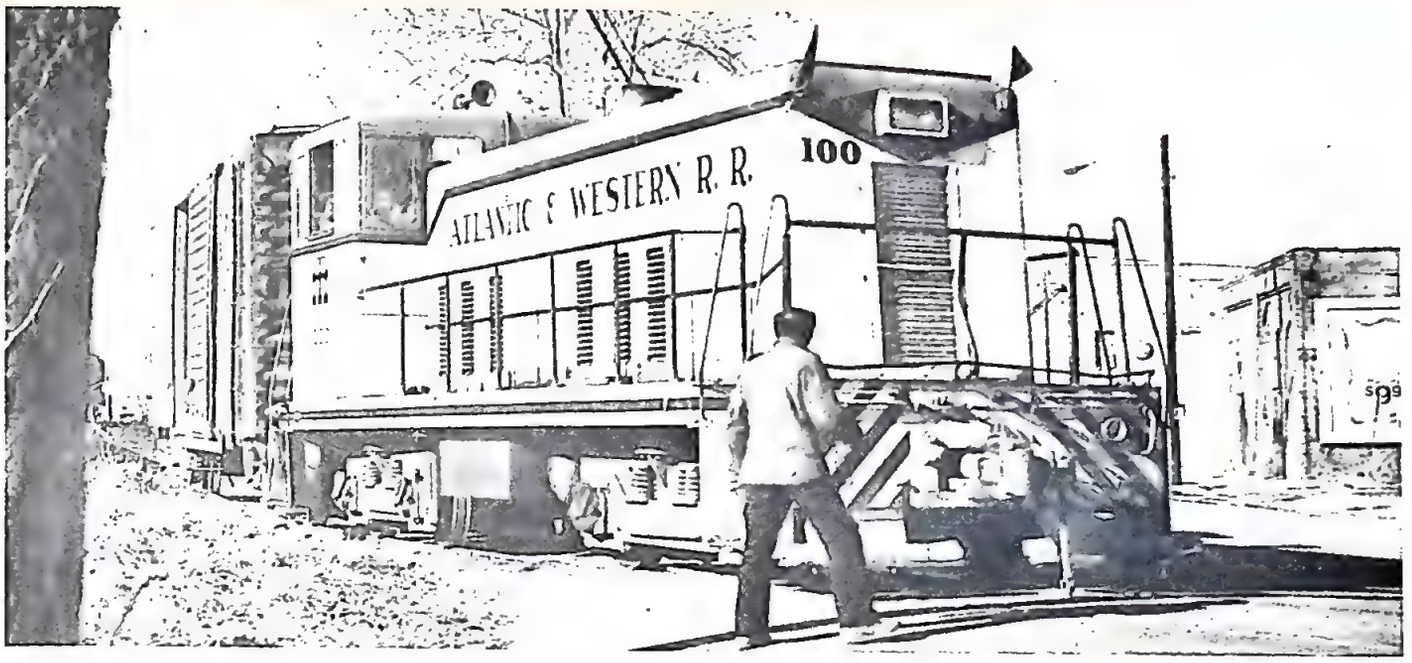
And the passenger business certainly didn't have any future for growth either, though the A&W did its best to get around that fact.

"In September 1917 we purchased a gasoline motor car for handling passenger traffic," General Manager H. P. Edwards reported in 1921. "This car was made from a regular highway truck and was more of an experiment."

The experiment worked, however, in helping to keep operating expenses down. A second car was acquired in 1920.

"At this time (May 1921)," Edwards wrote officers of the company, "we are operating our steam train only every other day, using the extra motor car on days the locomotive is laid off. This arrangement effects considerable savings in fuel and maintenance."

It was the beginning of the Edwards Motor Car Co.



Coming back down the hill with a lone box car to be spotted this afternoon, the GE 70 tonner again gets flag protection at the unsignalled Chatham Street crossing in front of the A&W headquarters.

Light rail spiked directly to ties, many of which have been around quite a while, and no ballast to speak of—this is the A&W's main line. All of the line's trackage isn't in this bad shape, and some renewal work was in progress near where the photo was made.

Some afternoons aren't as busy as others. Here the 70 tonner drifts home through Sanford's back streets after completing its work—which consisted of spotting a single box car; there was no outbound traffic.

But by that time the A&W had already suffered a near fatal blow that led to its first reorganization.

Between 1918 and 1920 the A&W, like other U.S. railroads, came under the control of the U.S. Railroad Administration. That government agency took away individual lines' options of routing traffic. As a consequence the A&W lost practically all through traffic, a fact it bitterly protested.

It never did get what it considered to be adequate compensation from the government, a situation that probably wasn't helped by absentee ownership that even included some foreigners.

The assets of the A&W, consisting of 24 miles of track, three locomotives, two box cars, a flatcar, three passenger cars, two passenger motor cars and three section cars went into receivership in 1926.

With its second and third hand equipment and home-built motor cars, the reorganized line struggled along, mostly managing to pay its bills yet never turning a profit.

In addition to its interchanges at Sanford with the Atlantic Coast Line and the Atlantic and Yadkin (later the SCL and Southern, respectively), the A&W also had an interchange at Lillington, first with the Raleigh and Southport, later to become the Fayetteville branch of the Norfolk Southern.

What few industries located in the area served by the A&W either located in Sanford or Lillington; those that located in Lillington opted for service from the Norfolk Southern, since that larger line would save an interchange move.

In 1950, the road made a concession to progress by purchasing a GE 70 tonner—new from the factory, believe it or not—one of the last versions of that versatile diesel.

Ten years later the A&W abandoned the 20.6 miles of track between Jonesboro and Lillington to become what it is today: a switching road for the Sanford area. A second diesel, an ex-military 80 ton Porter owned briefly by the Durham & Southern, was purchased as a backup engine.

That engine, built 1945, one of only seven of that type built, had been bought by the D&S to switch the Nello Teer sand and gravel plant at Erwin; the Porter, however, couldn't manage more than a couple of loaded hoppers, so the D&S, which had also supplied the A&W with two 4-6-0s earlier, sold it to that line.

The A&W renumbered the Porter to 101 from the 500 it had carried on the D&S, but continued to operate it in the D&S's black and white colors for some time. The GE 70 tonner had been numbered 100 on acquisition.

Both engines are equipped with electric heaters to keep the cooling water from freezing during winter months, so that they do not have to be left idling. Though the Porter is a center cab and the GE an end cab, the GE is the engine used most.

A trip with engineer-conductor-master mechanic David J. MacNeil reveals a surprising fact about the three-mile A&W—it does most of its switching by gravity, though it isn't quite the same kind of gravity switching done on computer controlled hump yards.

MacNeil, accompanied by one or two flagmen - switchmen - brakemen, usually cranks the 70 tonner up twice a day on weekdays—if there are cars to be moved.

After idling long enough to let the compressor build up the air in the reservoir, MacNeil puts the GE in reverse, and rumbles across Chatham Street and up the hill to the interchange tracks with the Southern and the SCL. Usually there are two or three cars waiting—a loaded tank car and a loaded box car, or maybe a couple of empty gons.

This time we're heading down the hill with two boxes and a full tank in

A AND W LOCOMOTIVE ROSTER

No.	Type	Builder/Date	Acquired by A&W	From/Previous No.	Disposition Date	Notes
1	4-4-0				Scrapped 2-18-30 Last used 2-20-20	1
3	2-8-0	Baldwin	5-1915	Southern Iron & Equip., Atlanta	Scrapped 2-18-30 Last used 3-15-23	
5					Scrapped 9-6-30	2
6	4-6-0	Rogers 1900	7-31-23	Southern Iron & Equip., Atlanta	Scrapped 5-28-26	3
7	2-8-0	Roanoke Mach. Works 1890	2-28-27	Norfolk & Portsmouth Beltline 15	Scrapped 8-3-30	4
8	4-6-0	Baldwin 1905	9-1-30	Durham & Southern 106		5
9	4-6-0	Baldwin 1905	2-1934	Durham & Southern 104		5
10	2-8-0			Kaul Lumber Co. 15		5
11	2-8-0	Alco 1903 (Richmond)		Aberdeen & Rockfish 45		5, 6
12	2-8-0	Baldwin 1911	6-8-48	Norfolk Southern 203	Display Sanford	7
100	B-B 70 ton Diesel	GE 1950	10-1950	New from GE	In service	
101	B-B 80 ton Diesel	Porter 1945	3-1976	Durham & Southern 500	In service	

NOTES ON LOCOMOTIVE ROSTER

General notes: Blanks in various columns indicate the information was either not found or not applicable. Between March 2 and May 14, 1923, the A & W also leased Laurinburg and Southern No. 645. No indication was found of whether the A & W ever had locomotives numbered 2 and/or 4.

1. The only reference to this locomotive found in the A & W records states it was "originally numbered 3, then 4, then 1," but does not explain if these were A & W numbers or those of previous owners, nor reasons for renumbering.
2. The only reference to locomotive 5 shows it as being scrapped.
3. Locomotive No. 6 was extensively rebuilt by Southern Iron and Equipment Co. of Atlanta before being put in service on the A & W.
4. Built for Norfolk & Western, where it carried No. 236; rebuilt by Norfolk and Portsmouth Beltline 1925.
5. Locomotives 8 through 11 are all presumed to have been scrapped, though no definite information to that effect was found.
6. Locomotive 11 was a former Seaboard engine that first carried 652 and was later renumbered to 981.
7. No. 12 was built for Norfolk Southern predecessor Raleigh and Southport and was its No. 10; it later carried NS No. 99. It was last used October 11, 1950 and was set up as a permament display in downtown Sanford, North Carolina, November 26, 1966.

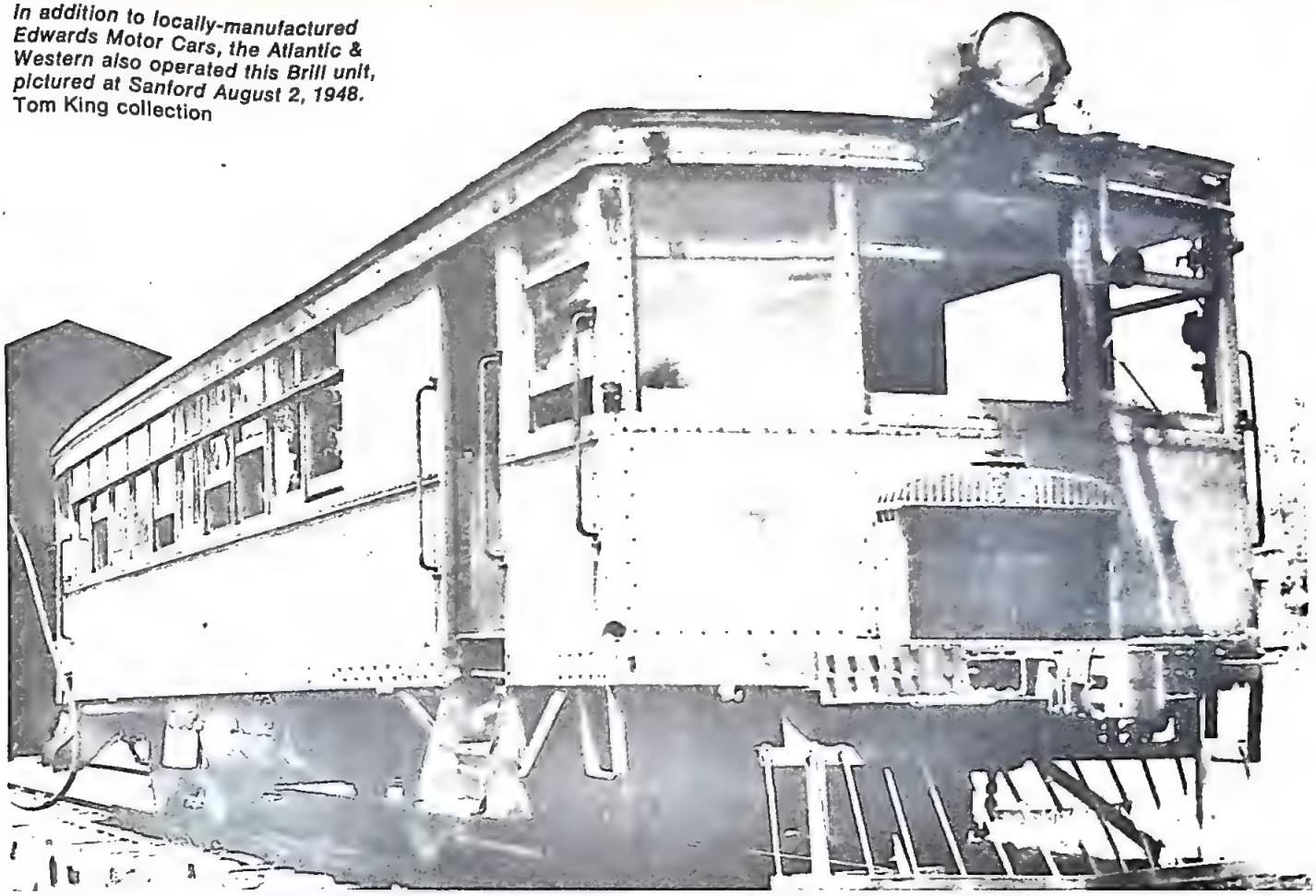
PASSENGER MOTOR CARS

The A & W also operated seven passenger motor cars, the first two of which (1917) were primitive home-built conversions of highway truck bodies to flanged wheel operation. Most of these did not last long; No. 1 is recorded as having been scrapped in 1921.

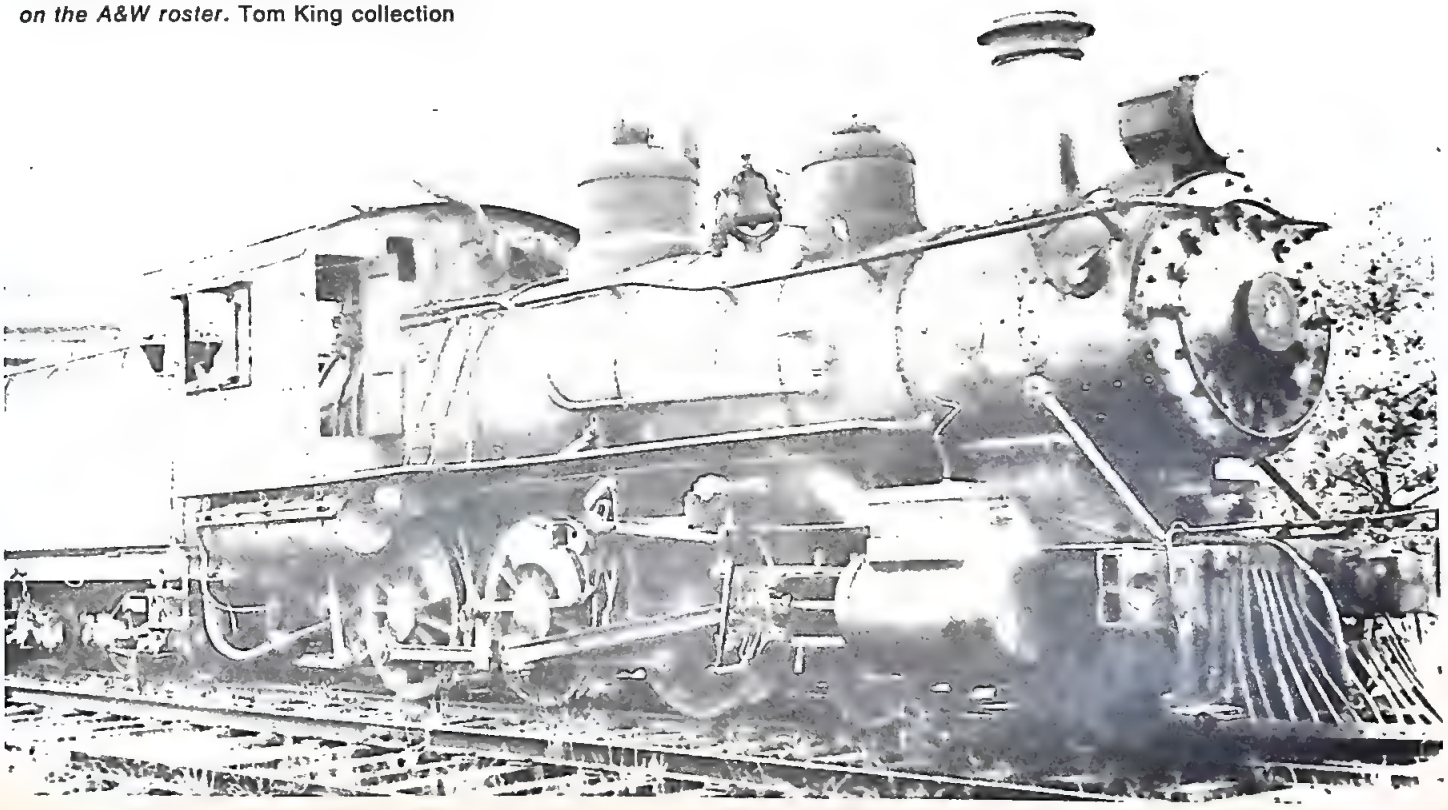
Two of the passenger motor cars were products of the Edwards Co. of Sanford.

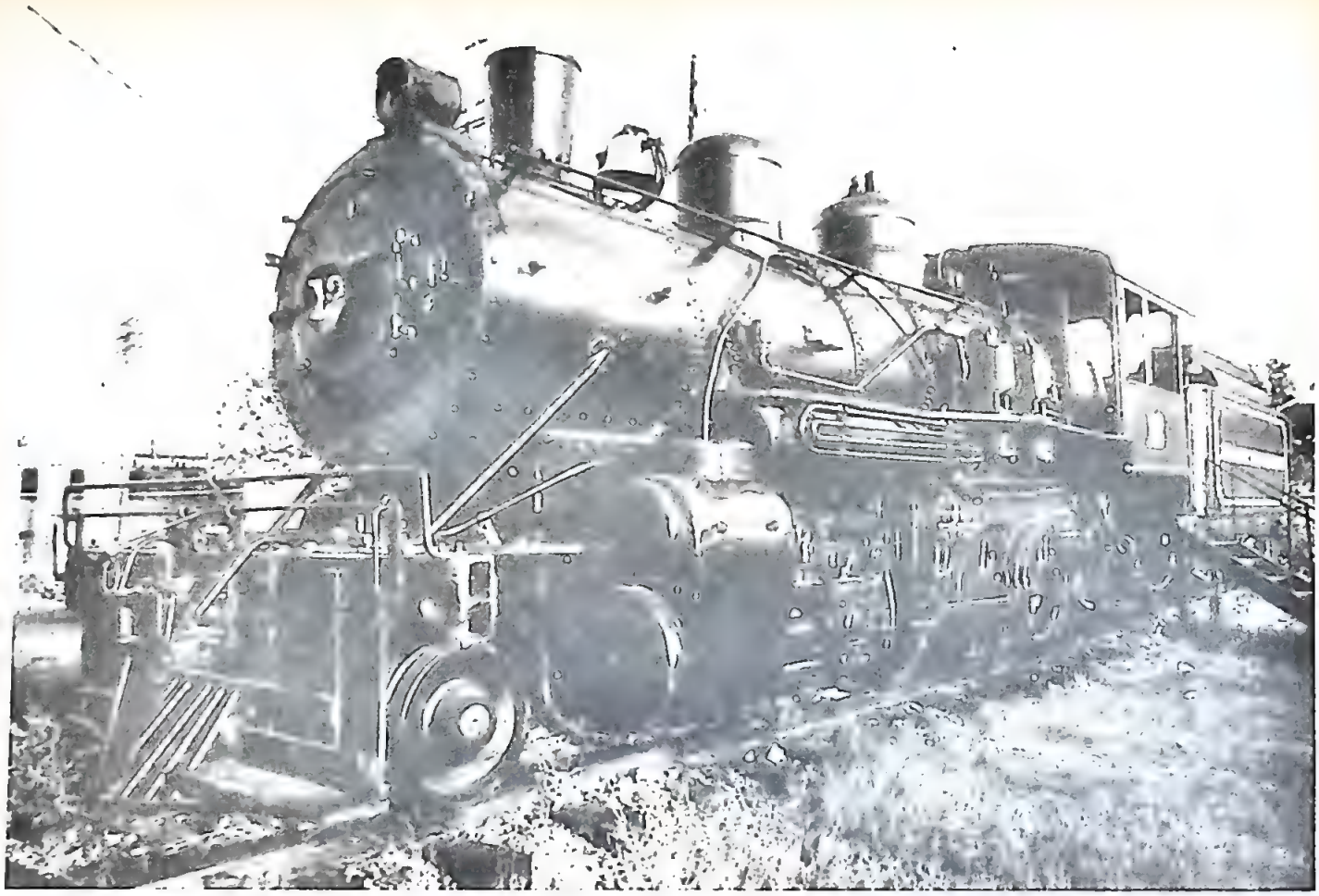
The last passenger motor car used by the A & W, No. 7, was a Brill model 55 ex-Long Island car bought from Cummins Diesel Corp. December 13, 1939. The car, built in 1927, is shown as being offered for sale by the A & W in 1950, though the actual disposition was not recorded in the files available for examination.

In addition to locally-manufactured Edwards Motor Cars, the Atlantic & Western also operated this Brill unit, pictured at Sanford August 2, 1948. Tom King collection



The Durham & Southern supplied the A&W with three pieces of motive power—two steamers and a diesel. This 1905 Baldwin 4-6-0, sold by the D&S in February of 1934, was still in service at Sanford on May 29, 1950. The former D&S number 104 carried number 9 while on the A&W roster. Tom King collection





Set up as a permanent exhibit in downtown Sanford in 1966, the Atlantic & Western's last steamer, No. 12, was in rather sad shape by late 1974. For the town's centennial, the locomotive was given a coat of glossy black paint, at least making some cosmetic improvements.

tow. The first order of business is to get the cars blocked ahead and behind the engine in the direction of the sidings they'll have have to be spotted on.

A runaround track would make it too simple. This is where the gravity switching comes in. Sanford is a hilly town, and most of the A&W's track goes up and down those hills.

We run past a trailing turnout, where the siding goes slightly uphill. The tank gets shoved up the hill, a crew member sets the handbrake, and the 70 tonner rolls back onto the main track, then backs up beyond the turnout.

The crewman cranks off the brakes on the tank car, and lets it roll back down onto the main. With the hand brakes set once again, we roll forward and couple up.

While the air hoses are connected again, MacNeil uses the moments to shuffle through his paper work; it was something he would do again later whenever there was a moment to spare.

The black UTLX isn't really completely full—it's about half full of liquid fertilizer, which, from the gravity switching, is sloshing around inside like crazy. As a result, though the brakes on both the car and the engine are set, the slack between the two is constantly going in and out.

There's nothing quite like getting seasick on dry land.

After a few moments, though, MacNeil notches out the simple throttle control, and we're rolling down the track, pushing the tank car and trailing the two boxes. Even in motion at little more than a walking pace, we could still feel the liquid sloshing in the car ahead of us.

Fortunately, the siding where the restless car was to be delivered came up quickly. The crewman who cranked down the handbrakes made extra sure they would hold.

Then we were wobbling along the well-worn track again. The small engine's deep horn bellowing for each cross street, which, even at our slow pace, came one after another.

At one point, running down the middle of a narrow dirt road lined by small frame houses on both sides, we had to wait until a parked car was moved out of the way. Further down the track the section crew was putting in new ties and the wait for them to get their equipment out of the way brought another delay.

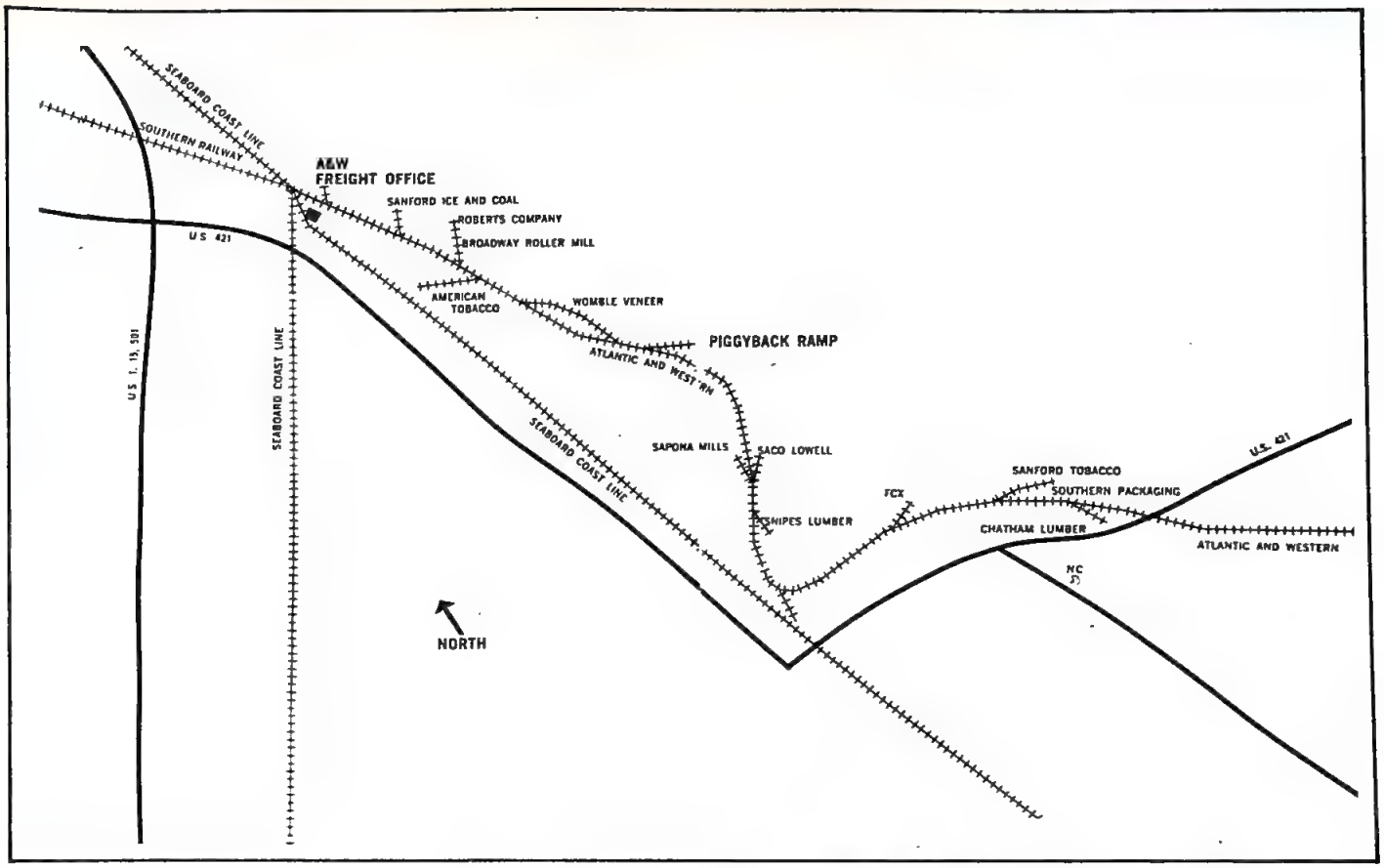
Still further down the line, at a scrap paper dealer, workmen were loading bundles of used corrugated cardboard on a box car spotted directly on the main track. There hadn't been space to put it in a siding, but that didn't keep the A&W from serving a customer.

To spot the final car of the run, we had to get past that car sitting on the main. As soon as the workmen loading the car saw the engine coming, they started taking up the bridgeplates from the loading dock.

The car was back at the loading platform and work back in progress in about ten minutes.

The trip that afternoon hadn't even come anywhere near the end of the line; we had only gotten two miles from the interchange.

On the way back, extracting a Southern "Big John" covered hopper from a siding, the engine bounced a bit more than even the low joints should have given occasion for. The line's engineer-conductor-master mechanic turned track inspector and found a broken rail apparently caused by the extra-heavy piece of rolling stock. All wheels had remained on the



A scrapyard is one of the A&W's best customers. As the engine casts its shadow on the gate, an A&W trainman calls for someone to come and unlock it. Three tons of scrap make quite a load for the engine—especially when the going is uphill.

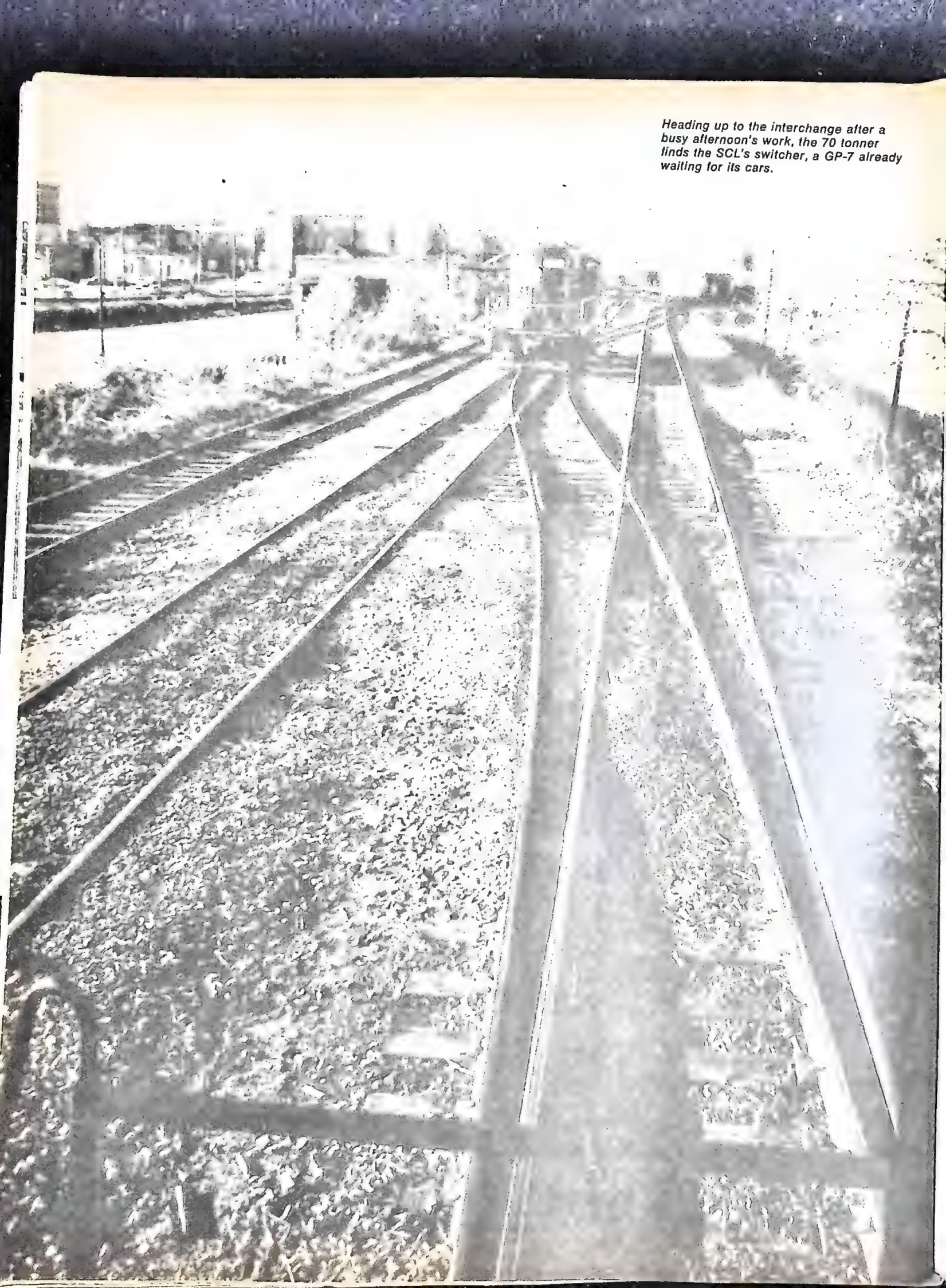
track, however, so all MacNeil had to take care of was more paperwork.

The broken rail was duly noted and would be reported to the front office. The section crew would replace the rail the next morning.

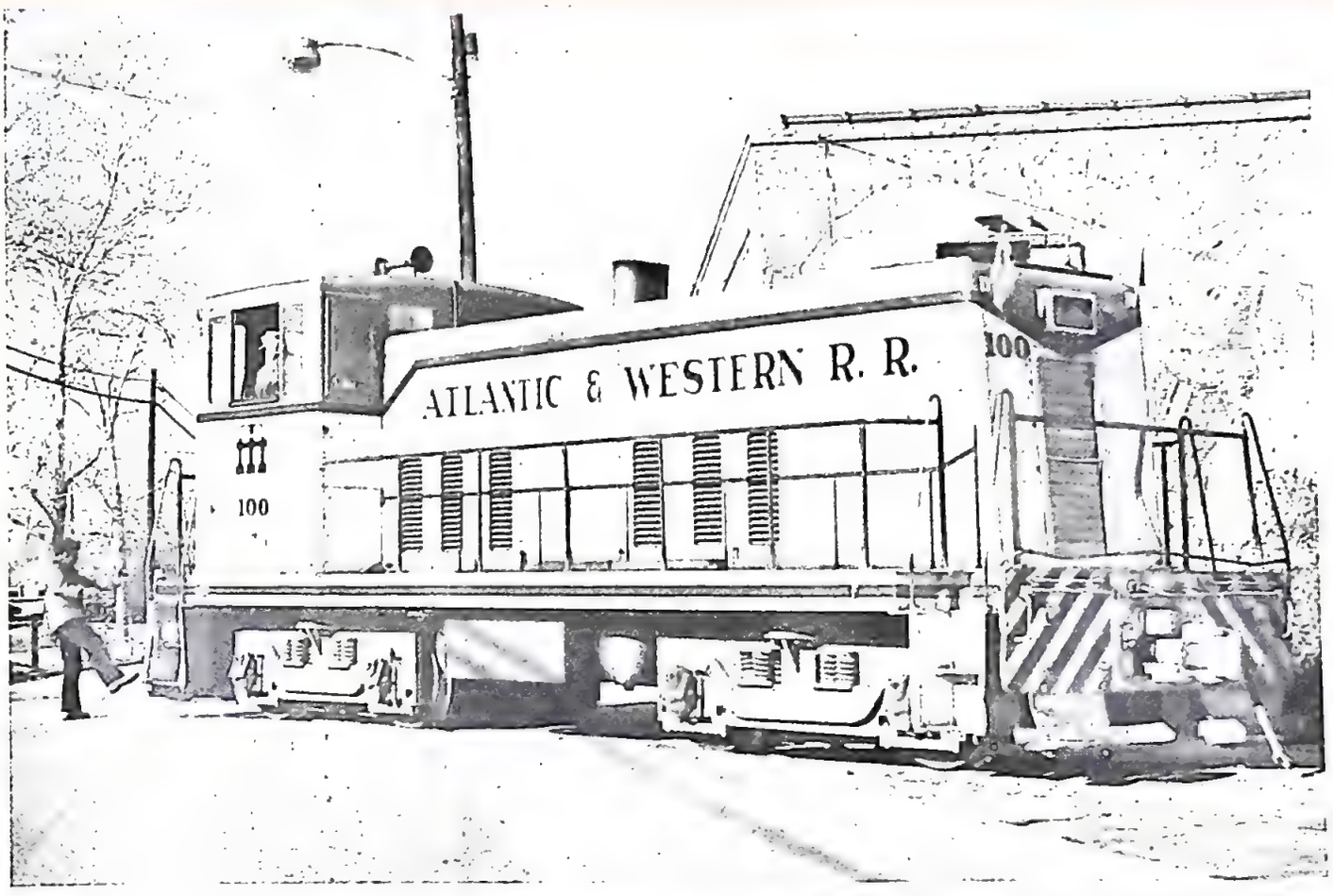
With two gons full of scrap iron at the back, following the final pickup at a scrapyard, the 70 tonner was trailing a fairly substantial train—at least as far as tonnage—as it rumbled backwards back to the office and the interchange. In fact, the train proved to be too heavy for the 70 tonner to get up the hill to the interchange tracks. The rear sanders on the engine had rusted out long ago.

MacNeil handled the situation in typical A&W style. His two crewmen flagged the Chatham Street crossing while he backed up several hundred yards. With a running start and some deft handling of the throttle, he made it on the third try.

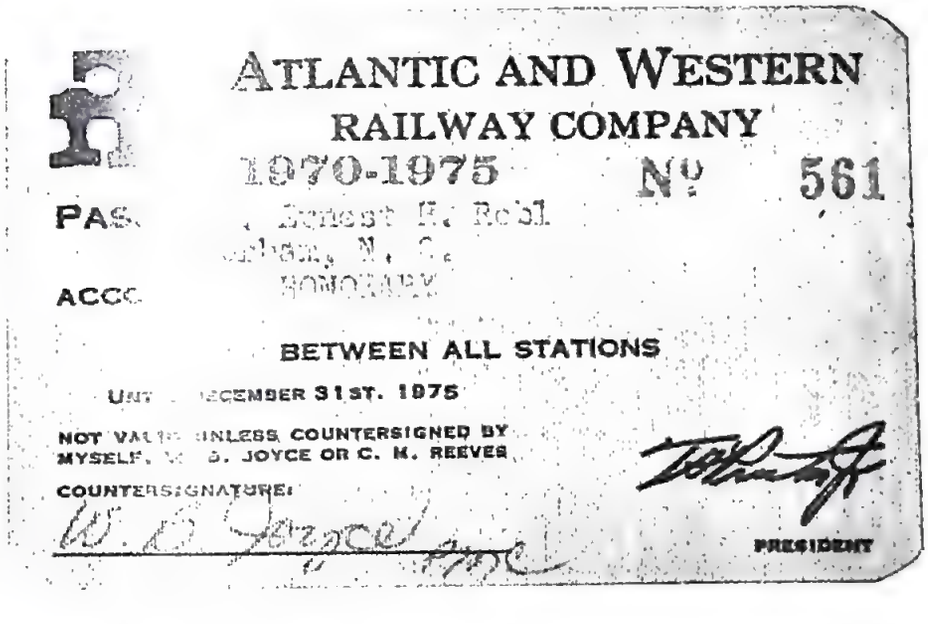
Up on the hill, the SCL's Sanford switcher, a GP7, was shuffling cars. Moments after MacNeil had dropped his afternoon's gatherings on the interchange track, the geep drifted over to collect them. They would be headed out on the next SCL local.



Heading up to the interchange after a busy afternoon's work, the 70 tonner finds the SCL's switcher, a GP-7 already waiting for its cars.



Flagman jumps aboard after clearing the way as No. 100 crosses Chatham Street to head up the steep hill to the interchange rack. When the GE swicher has a lot of tonnage, it sometimes has to back up for a running start to get up the hill.


ATLANTIC AND WESTERN
RAILWAY COMPANY
1970-1975 No 561
PAS
ACCC
BETWEEN ALL STATIONS
UNT DECEMBER 31ST. 1975
NOT VALID UNLESS COUNTERSIGNED BY
MYSELF, W. S. JOYCE OR C. M. REEVES
COUNTERSIGNATURE:
PRESIDENT

One impression you get from the A&W is that its employees still think that running a railroad can be fun—as evidenced by the fact that it issues passes valid "Between all stations" on the three-mile line.

All that remained for the three-man A&W crew was to tie up next to the office and shut down. MacNeil checked once more around the engine, plugged in the cooling water heater and then locked up. Finishing up the paperowrk would keep him busy for another hour or so.

Anyone who came by then and saw only aging diesel switchers sitting by the small office building, the lack of engine service facilities and the rotting ties would miss the whole point of the A&W. To see that, you had to have traveled along on the afternoon switching run.

For, despite the fact that MacNeil was doing the jobs of three or more people on larger roads, despite the fact that he was both running the engine and doing the paperwork, he was never too busy to climb down and say a few friendly words to the shippers. Try to find another railroad where the switching crew knows the shippers by name.

Or, step inside the office. Here you'll find people who still think that running a railroad can be fun. This is a small railroad that nonetheless managed to preserve one of its steam locomotives as a permanent display and to donate its files to a university library for historical research.

These are people who are proud to talk about their operation, even if you aren't necessarily interested in buying or leasing an industrial site. And, if you show sufficient interest, they may even issue you a pass good "between all stations."

At that point it doesn't really matter that there aren't any stations left on the three mile line, or that it never reached the Atlantic or laid any tracks west of its home town. Distance isn't everything.

MR. EDWARDS' RAILBUSES

By Ernest H. Robl

THE A AND W RR WAS NOT SANFORD, N.C.'S ONLY CLAIM TO FAME

Quick! Name something that the city of Bogota in South America, the Black Star Coal Co. of Louisville, Ky. and the Chicago, Burlington & Quincy Railroad once had in common.

Stumped? Well, how about the fact that they all once owned gasoline motor cars built by the Edwards Railway Motor Car Co. of Sanford, N.C., U.S.A.?

The Q bought an even dozen from the North Carolina firm; a variety of southern shortlines snapped them up one or two at a time in an effort to keep their passenger business in the black.

But H. P. Edwards, who managed to make a career out of patching up down at the mouth shortlines, didn't just believe in thinking small. Once he realized that there might just be something to crossing a bus with a railroad car, he didn't limit himself as to customers, as the U.S.A., which he added to the firm's address on all advertising matter, attests.

Twelve lines outside the U.S. borders accounted for nearly a third of the 98 cars sold by the firm while under Edwards' management. The broad gauge Panama Railroad and the standard gauge National Railways of Mexico each bought five as did the city of Bogota—the three largest foreign customers. At least one Edwards car operated in British Columbia.

While other motive power manufacturers built their product from the ground up, the Edwards Co. was essentially a matchmaker, marrying motors made for highway trucks and buses to custom frames riding on flanged-wheel trucks and then adding Westinghouse air brakes and other subassemblies made by other railway equipment manufacturers.

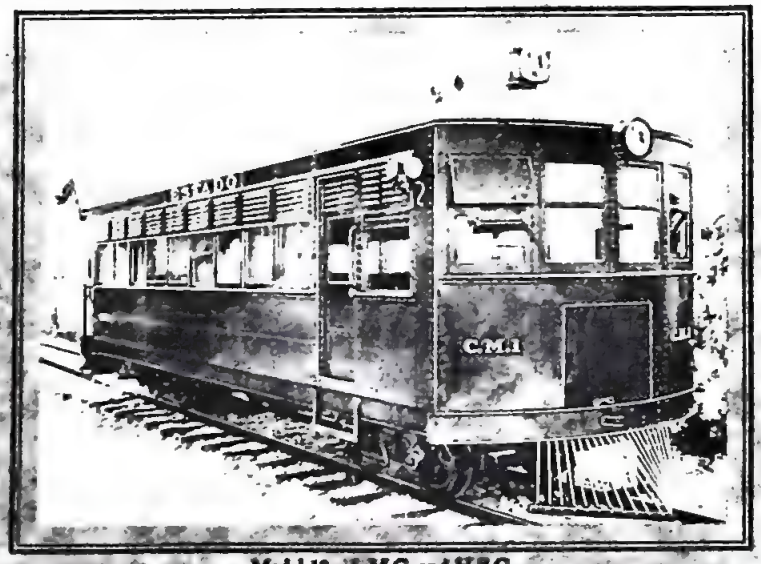
That was the way the first Edwards railbus was built. The Atlantic & Western needed some way to cut costs on its passenger and express business between Sanford and Lillington, N.C. Even the small steamers owned by the line were costing too much to operate to haul one or two-car trains.

That first crude, mostly home-built

Undated Edwards catalog features a model 10 sold to one of the firm's Latin American customers. Worthy of note is the U.S.A. in the firm's address; almost a third of the cars built at Sanford went to foreign lines.

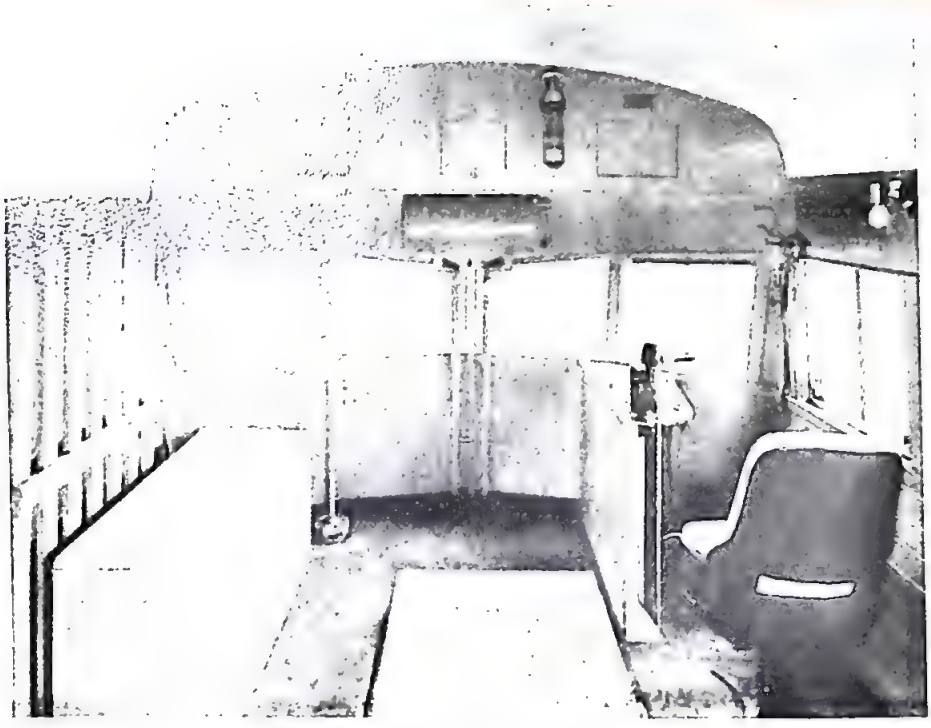
ILLUSTRATIONS FROM EDWARDS RAILWAY MOTOR CAR CO. CATALOGS

EDWARDS
GASOLINE RAIL CARS



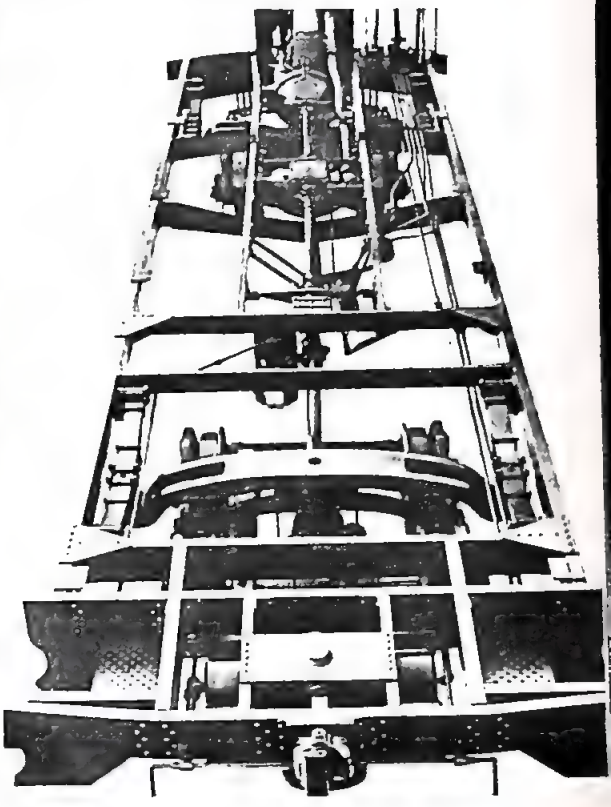
Model 10—L.M.C. and H.R.C.

EDWARDS RAILWAY MOTOR CAR CO.
SANFORD, N. C. · U. S. A.

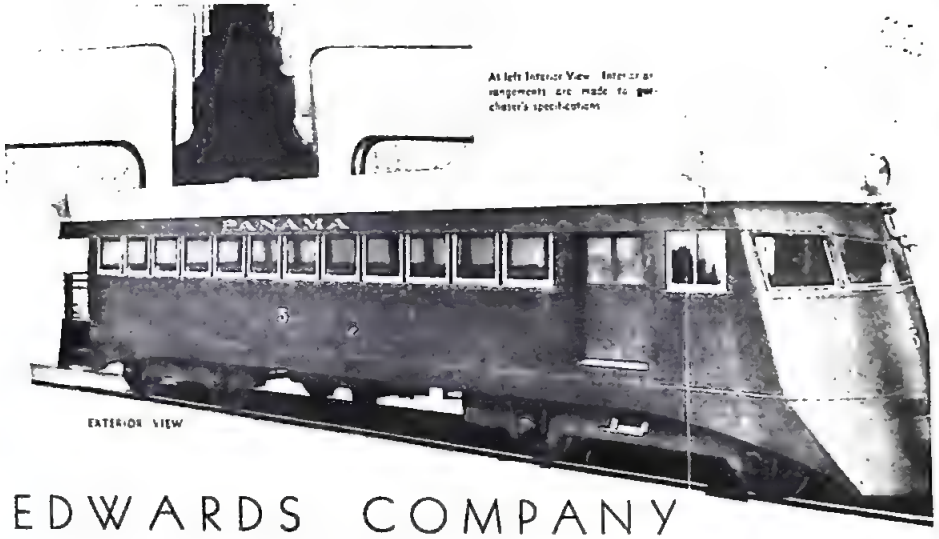


Interior view of baggage and operator's compartment.

The front of most of the motor cars was used for baggage. Broad gauge trucks allowed plenty of room for below-the-floor mounting of the powerplant, accessible here through the metal hatch in the center of the floor. The driver had a comfortably padded seat and unobstructed view.



The frame of a narrow gauge motor car with 19 foot truck centers shows the gasoline motor mounted on the frame at the front; only the rear truck is powered. The simple controls are visible at the right front.



EDWARDS COMPANY

The company was particularly proud of the five cars sold to the broad gauge Panama Railroad in the Central American country, featuring those products in a number of promotional booklets.

motor car of the A&W brought "rather remarkable results in economy of operation," Edwards wrote the line's directors, "the total cost per mile being less than ten cents."

Figuring that other small lines could use similar cost savers, Edwards organized his manufacturing company. It provided lavish catalogs to potential customers, extolling the simplicity and economy of passenger motor cars.

The gasoline motor car "offers a very neat and clean appearance and is practically free of noise and vibration," one of the later catalogs extolled.

After pointing out that its products had "very important safety features" such as Westinghouse air brakes and sanders and that they are built of fine quality metal and wood, the catalog gets to the options. They include such a variety of sizes of the vehicles themselves, plus interior and exterior fittings, that they added up to only one thing—the company would build practically any type of passenger motor car a railroad was interested in buying.

The catalog even offered to build the customer "a complete line of small gas-electric driven switching locomotives," though there is no evidence that the company actually did.

The company's versatility probably accounted for its finding buyers all over the western hemisphere. That same willingness to build almost anything on flanged wheels if someone was willing to pay for it probably also accounted for the firm's ultimate demise.

Yes, there was the general economic depression of the 20s and 30s, and even back then many smaller lines were getting out of the passenger business. But, in all probability, it was the offering of such a variety of products that kept the firm from gaining the benefits of mass production and a true assembly line.

The company, which had its beginnings with the A&W's experiments between 1917 and 1920, was in receivership in 1928 and had its assets sold at auction. It operated under different management into the 1940s after Cummins Diesel bought a controlling interest.

Edwards, of course, had other interests and went on to the Atlanta & Saint Andrews Bay and Atlantic and East Carolina railways.

THE PCC TROLLEY...A STAN

Photos from Stephen D. Maguire except as noted.

D DESIGN?

By Van Wilkins

Where once there was enormous variety in streetcars in the United States, today to the casual observer most cars look distressingly alike. There are exceptions in New Orleans and suburban Philadelphia, and with the advent of the Light Rail Vehicle (the "LRV") now in Boston. But all the rest are built to a standard design, developed at the instigation of a group of street railway presidents in the 1930's.

Standard design? Yes. Nearly 5000 were built between 1936 and 1952. However, if the casual observer will take a second look he can find numerous differences among the nearly 1000 still in existence in the U.S. and the 600-plus in Canada and Mexico.

This car—the "PCC" for Presidents' Conference Committee—was the result of a decline in the fortunes of urban transit companies, which became all too apparent in the 1920's. Street and interurban railways carried their greatest number of passengers in 1923, but the vehicles in which the 14 billion passengers rode were basically little changed from those of the early 1900's. Solid steel wheels running on steel rails transmitted their jolts and vibrations through much the same arrangements of springs to passengers seated on hard seats or strap-hanging in the aisles.

The cars themselves were still essentially superstructures built on flat cars, though wood had given way to steel in the underframes, and sides and other structural members of steel added strength. The basic "wheelbarrow" mounting of the traction motors was that devised by Frank Sprague at Richmond in 1888, and braking was still accomplished by noisy metal shoes clamping the wheels.

After 1923 traffic fell as riders deserted to automobiles. Dissatisfied passengers were even willing to pay extra fare to "ride on rubber" in the crude motor buses of the time.

Individual transit companies and car manufacturers realized that the trolley had to be improved, and experiments began with innovations in trucks, motor mountings, suspension systems, lightweight bodies, and more comfortable and better ventilated and heated interiors.

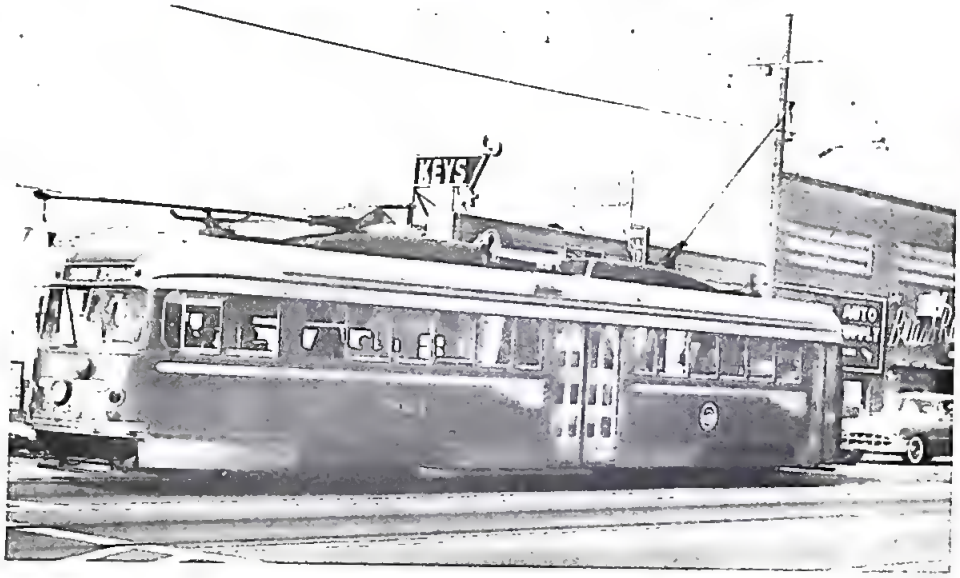
THEY ALL LOOK ALIKE . . . OR DO THEY?

What could be called the "standard" pre-war PCC design is seen in Philadelphia's 2679, part of a 100-car order filled by St. Louis in 1942. The typical post-war PCC is exemplified by 2097, also of Philadelphia, turned out by St. Louis in 1948. Principal changes were the addition of standee windows and elimination of the air brake system. Van Wilkins

Cincinnati in 1939 bought single samples of PCC's from St. Louis and Pullman-Standard and also a competing Brilliner from J. G. Brill. Car 1000 was the Pullman product. St. Louis won, but 11 years later PCCs disappeared from Cincinnati streets. The twin trolley poles were a Cincinnati characteristic.

The first PCCs to be double ended and to have multiple unit controls were 30 built for Pacific Electric by Pullman-Standard in 1940. When PE abandoned passenger service, these cars went to Argentina.

Clark Equipment Company built many PCC trucks, but only one complete street car. 1000 was delivered to Brooklyn in 1936. This was the first and for some years the only PCC to carry standee windows. The feature was not to become common until after WWII.



Washington, D.C. experimented with improvements to the ventilation system and air conditioned one car, adding a prominent roof monitor for the purpose.

Chicago Surface lines 4009 was part of one of the first PCC orders in 1936. It varied from the original design in that it was longer, had three doors at the front and a single door added at the rear, and covered the trucks with skirts. Chicago has no street cars today, but many PCC trucks were salvaged and used under rapid transit cars there.

It remained for Dr. Thomas Conway to form the Electric Railway Presidents' Conference Committee in 1929 to develop a totally new streetcar. The result in 1935 was the PCC. Relatively easy to mass produce, it added years to the life of street railway systems and today still runs in nine cities in the U.S., Canada, and Mexico.

In appearance the new car was radically different from all but a handful of cars then in operation. There were no sharp corners or angles, electrical equipment was concealed, ventilation was vastly improved, and comfortable seats were provided.

More important, however, was the running gear. Gone was the "wheelbarrow" motor mount, the noisy brakes, and the old suspension system. Hypoid gears, more powerful motors, extensive use of rubber, including layers in the wheels themselves, and three separate braking systems provided increased acceleration, an incredibly quiet ride, and improved and much quieter braking. These cars could easily out-accelerate the auto or bus of that day. Patents covered these improvements, and a purist would say that a PCC car was one that rode on PCC trucks and that the body alone didn't make a car a PCC. This distinction is not made by most fans.

The "standard" design was for a car to be operated in one direction in normal service, with reversing at the end of the line to be accomplished by means of a loop or wye. There was a double door at the right front and another midway in the right side. There were no doors on the left side of the car. Ventilation was through a hood mounted ahead of the trolley pole, but on hot days the windows could be opened. "Cut-outs" at the trucks allowed easier maintenance and greater truck swing on sharp curves. On wider bodies skirts were used to hide the wheels and enhance the illusion that the car glided along without the aid of wheels.

PCC's were built by St. Louis Car Company and Pullman-Standard Car Company. In addition, body shells were built by St. Louis for shipment to Canada and completion by Canadian Car & Foundry. Clark Equipment Company, builder of PCC trucks prior to World War II, built one complete PCC car for Brooklyn. J. G. Brill of Philadelphia chose to build cars not requiring the use of PCC patents, was not successful, and left the streetcar business to concentrate on trolley and gas buses. Some conventional cars were built even after the advent of the PCC, most notably by the Third Avenue Railway System in their own shops in New York, and by the Ottawa Car Company of Canada.

Initial PCC deliveries were for Brooklyn, Baltimore, and Chicago. Cars for the first two were of the "standard" configuration, but the Chicago cars added length and a third door at the rear and covered the trucks with skirts. This represented the first of a number of variations introduced to cope with special operating conditions.

Cars produced prior to World War II generally followed the standard body type. After Chicago, the first major variation was in 30 double-ended cars

The standee window [illegible] most standard for post-war [illegible] PCC. An exception was Kans[illegible] which preferred the older configuration. They did adopt the recessed windshield, however. Here a former KC car is seen in bicentennial paint in Philadelphia. Van Wilkins

The first PCCs to eliminate the center doors were five St. Louis products built in 1939 for the San Francisco Municipal Railway. San Francisco was in an experimental mood, and these so-called "Magic Carpets" featured various combinations of trucks and electrical gear. The original five are no longer in service, but ten post-war cars of similar design, now converted to single end operation, still run there.

built for Pacific Electric. The front-and-center-doors arrangement was retained, however. These cars were also equipped for multiple-unit operation—another first.

The San Francisco Municipal Railway also needed double-ended cars, and five so-called "Magic Carpets" built by St. Louis in 1939 represented the first PCC bodies in which the center door was eliminated in favor of a door at the rear. In an experimental mood, the Muni ordered three on Clark PCC trucks and two on Brill trucks. Both Westinghouse and General Electric electrical components were specified, so that only two cars carried the same combination of trucks and electrical gear. Ten more cars of similar body design were delivered in 1948, this time equipped with St. Louis B-3 trucks—a postwar version of the PCC truck. These have since been converted to single end, with doors on the left side merely blocked in some cases and completely removed in others. Locally these ten cars are known as "torpedoes." The Magic Carpets are no longer in service, though one has been preserved at Rio Vista.

Other variations in body design appeared after World War II. The most obvious was the "standee" window. This was a small window cut above the main one, which allowed a standing passenger to see where he was without bending. This was not a new idea. The one car turned out by Clark in 1936 was so equipped, and large orders appeared in St. Louis in 1941 and Washington, D.C. in 1945. Not all postwar cars were ordered with this feature, however. Conservative Kansas City stuck with the older design, as did San Francisco for its torpedoes.

Other postwar double ended cars also omitted the standee windows. These included 25 for Dallas similar to those of San Francisco in appearance, eight cars for multiple unit suburban service on the Illinois Terminal (which also were unique in having only one door per side), and 14 cars for the Philadelphia Suburban Transportation system. The latter used non-PCC trucks of a St. Louis Car design and also were equipped for MU operation.

Another design change involved a much sharper slope to the windshield, with the top recessed into the car. In some versions this seems to give a distinctive frown, though the intent was probably to shade the windshield. In some cases companies added external visors for the same purpose.

In Boston a number of routes reach the downtown area via a subway. The "island" stations between the tracks required another modification in the form of a center door on the left side of the car. Cars with a similar feature operate on the Shaker Heights line in Cleveland. Purchased in anticipation of operation in a never-built subway, the left side doors are blocked and not used.

The original ventilating system of the PCC was also improved in a number of cases. A roof monitor containing louvers and large fans was added, running the length of the car. In some cases this was quite prominent; in others it is barely noticeable. Cars in

Dallas Railway & Terminal received 25 double-ended PCCs in 1945, after waiting three years for the order. Seen here in Dallas, these cars now run on the Ashmont-Mattapan high speed line in Boston. As new LRV's arrive these cars will probably be early candidates for scrapping.

In 1946 the City of Shaker Heights, Ohio ordered 25 cars from Pullman-Standard. Anticipating operation in a subway in downtown Cleveland, a door on the left was specified. The subway was never built, and the doors are blocked. These are the last examples of skirted PCCs in their original configuration still in operation in the United States.

Boston, Pittsburgh and Toronto carry this feature today. With better ventilation it was thought no longer necescary to provide windows which opened, and cars with sealed windows appeared. Boston then went a step farther in its final PCC order, specifying windows twice as wide as normal. Since passengers no longer had to open windows for ventilation, these picture windows were possible. There are those who hold that these are the handsomest PCC's built.

Washington, D.C. had no cars with monitors as original equipment, but added them in experiments. One was air conditioned.

Postwar cars had a number of mechanical and electrical changes not apparent to the casual observer. Perhaps the most significant change was the elimination of the air brake system on most cars ordered for delivery after the war. A brake operating on the drive shaft between the motor and axle was substituted and was electrically actuated. The first of these cars, termed all-electric, appeared in St. Louis in 1940, and the arrangement became common after the war ended, though large numbers of the older "air-electrics" were still produced.

A modification of the truck itself was also built by St. Louis Car. Termed the B-3, as opposed to the earlier Clark B-2, it incorporated differences not readily apparent to the man in the street.

Companies, of course, modified their fleets based on experience and expediency. Both San Francisco and El Paso mounted a second trolley pole on their single end cars to facilitate back-up moves. Pittsburgh has rebuilt a wrecked car with a new front end resembling that of the LRV. In Mexico City, doors have been added to the left side to cope with special operating conditions. In addition a number of cars there have been given major renovations or rebuilds involving window changes giving a distinctly European look.

The most startling rebuilds of cars in the U.S. have to be those of Leonard's Department Store in Fort Worth, Texas. They have converted a number of ex-Washington PCC's to high level platform loading to provide service through a subway between their parking lot and store. The result is hardly recognizable as a PCC.

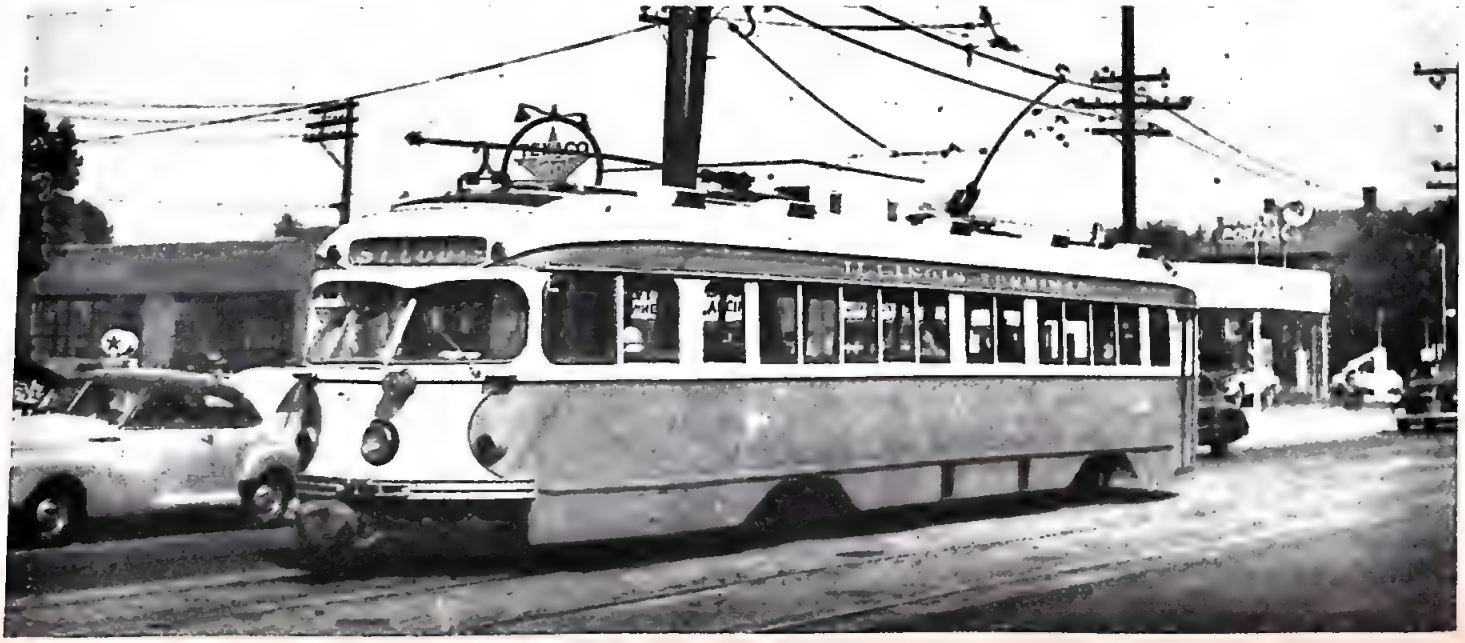
And inevitably, PCC's have been converted to work use. This has taken place in Pittsburgh and Boston.

What can still be seen today? Most cars remaining in service are of postwar vintage, single ended, and with standee windows. There are a large number of prewar cars of the original pattern still in service in Philadelphia, along with some ex-Kansas City postwar cars which have the recessed windshield but lack standee windows. Cars with roof length monitors (some with sealed windows) can be seen in Boston, Pittsburgh, and Toronto. The Boston cars include those with the extra-wide windows. The Dallas double-enders now operate on the Ashmont-Mattapan line at Boston. The

Toronto Transportation Commission 4697 was ordered for service in Louisville, was delivered instead to Cleveland, and after five years was sold to Toronto, where it still serves. Multiple Unit equipment was added after its arrival in Canada.

In 1948 St. Louis Car Company built 14 PCC-styled, double-ended bodies for multiple unit service to communities west of Philadelphia. They did not use PCC trucks, however. The St. Louis truck of more conventional design, clearly visible here, was thought to be more suitable for this service. Van Wilkins

Built for suburban service out of St. Louis, eight of these double ended PCCs of the Illinois Terminal were unique in that they had only a single door per side. Two survive and in 1977 were on lease from museums to Shaker Heights. Unfortunately, years of little activity took their toll, and operation in Cleveland has left much to be desired.



Pittsburgh Railways had a number of PCCs equipped with roof-mounted headlights, pilots, and St. Louis B-3 trucks for interurban service on lines south of Pittsburgh, the only PCCs in the United States to be so equipped. The cars also have sealed windows on the theory that the fans mounted in the full length roof monitors provide adequate ventilation. The interurban lines are gone, but the cars remain in service. Van Wilkins

Considered by some to be the most attractive PCCs built in the U.S., Boston's cars with sealed picture windows share with a San Francisco order the distinction of being the last PCC cars to be built in the country. Pullman-Standard turned out 3311 in 1951. The door on the left side and the MU coupler are Boston characteristics.

similar San Francisco torpedoes are still in service, though converted to single end. And the Philadelphia Suburban cars are still operated out of the 69th Street terminal.

Cars equipped for multiple unit operation have the skirt at the front and rear of the car cut away to accommodate the swing of the massive couplers. All cars on Shaker Heights and at Boston (except the ex-Dallas cars) are so equipped, as are a number of cars in Toronto. MU couplers permit train operation, usually in rush hours, and a three car train moving at a fast clip is well worth seeing.

In Pittsburgh cars carrying roof-mounted headlights and interurban style pilots still operate on the remaining stubs of two interurban lines.

The skirt-equipped cars have disappeared from Chicago (their trucks now carry rapid transit cars in that city) but some Shaker Heights cars still carry this feature.

There is still a lot of variety left to see.

The newest PCC's built in the United States are now 25 years old, and some 35-year veterans still run in Philadelphia. This is something of a tribute to the skill of those who designed and built the PCC and to the ingenuity of the maintenance crews who keep them running today. One wonders if the LRV will do as well.

SCANNER TALK

THE REGENCY WHAMO 10 SCANNER By Ed Stauss

With the Regency Whamo 10 scanner there's no agony over what crystals to buy because you can, in effect, "roll your own" with its frequency synthesizer circuitry. Instead of buying crystals, you prepare a metal comb by breaking off certain teeth in accordance with simple instruction and plug the comb into one of ten connectors on the back. If you also buy the model DFS-5K Digital Frequency Selector, you can tune the channels just like on a TV set.

I found the frequency selector to be very handy by letting me scan the band, checking anything that sounded interesting in my frequency directory, to find out what channels I really wanted. Then I would cut the combs for those channels.

Here's a run down on the basic functions of the Whamo 10:

—Ten channels pre-selected by comb or . . .
—Nine comb channels and one frequency selector channel
—sharp cut-off squelch
—channel on/off switches
—Manual switch to hold receiver on any one channel
—Step switch to advance the manual selection to another channel
—All bands: low and high VHF and UHF.

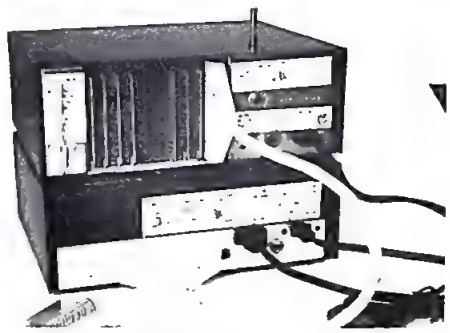
The set has excellent sensitivity. Using just the standard inside antenna, I can monitor activity at a major railroad yard about 30 miles away. All the tower operators come in well although I can hear only some of the trains. Incidentally I took a ride in a caboose near here one time and found the train was having trouble with reception too.

This unit is a bit large for a mobile installation, but it can be operated off of 12V dc and it did operate well in my car without a hint of ignition noise.

A third use for the scanner would be in a trailer or camper while camping near a railroad. I tested it that way in my trailer parked within 100 feet of a main line and found the reception was good even with the scanner and its 20-inch telescoping antenna inside the trailer.

Surprisingly there was some unexplained noise in the audio output when the scanner ran off the trailer battery. I suspect the automatic gain control was not effective with the very strong signals we got from passing trains. On weak signals there was no problem, but strong signals would cause an audio oscillation until the volume control was turned down.

I would rate the noise as an annoyance rather than a problem. When the set was used at home several miles from the nearest track, it worked perfectly. Most people purchasing the Whamo 10 will probably keep it at home because it is a super desk model, but a bit large for mobile use.



One final feature I liked was the front-mounted speaker. It gives good, easily understood sound with none of the "squawk box" effect of the cheaper scanners.

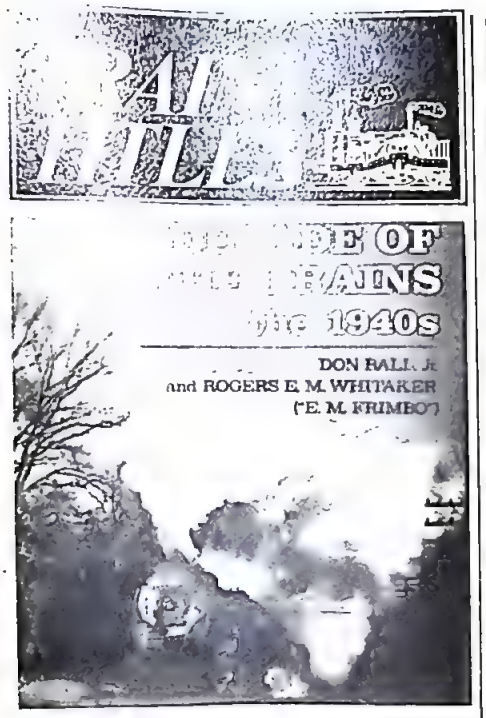
Regency Frequency Synthesized Whamo 10 Scanner Model ACT-W10

	VHF Lo	VHF Hi	UHF
Frequency range	30-50 Mhz	146-174 Mhz	440-512 Mhz
Sensitivity at 20 db	1.0 uv	1.0 uv	1.5 uv approx.
Scan rate	12 channels per second		
Size	10 inches wide x 4 inches high x 8.5 inches deep		
Weight	9 pounds		
Use	Can be used by itself as a monitor receiver		
List price	$349 including antenna, no crystals required		

Regency Digital Frequency Selector Model DFS-5K

Frequency range	Same as model ACT-W10
Size	10 inches wide x 4 inches high x 9 inches deep
Weight	4.25 pounds
Use	An accessory to the model ACT-W10; provides instant frequency selection
List price	$219

Manufacturer ..... Regency Electronics, Inc., 7707 Records St., Indianapolis, IN 46226



Decade of the Trains, the 1940's by Don Ball Jr., and Rogers Whitaker, published by New York Graphic Society, 34 Beacon St., Boston, MA 02106. 288 pages, 10¼″x11″, $24.95.

Speak of the Forties and immediately what comes to mind is the Second World War, and it was this greatest of all wars, as many historians claim, that the American railroads were put to the test. Emerging from the financial disasters of the 30's the railroads were suddenly faced with the task of transporting millions of troops and mountains of supplies.

Mr. Whitaker (well known for his E. M. Frimbo tales in the "New Yorker" magazine) handles the narrative from one phase to the next covering not only the war years, but the end of the decade when the trucks and airline industry was making a bold bid for the railroads' livelihood. Being a member of the Army's Transportation Corp during the war, he is well informed to provide details and the feeling of the period, which he does with great style.

Mr. Ball was left with the collecting of the photos and captioning them, both tasks done very well. More than just the trains, the book has a wealth of views showing the people connected with the railroads, both the workers and the travelers. The photos in the shops and stations are exquisite, not only showing the "romance" of railroading, but also the "just plain hard work" element as well. This is the finest book of the period that we have ever seen. G.A.

Portrait of a Silver Lady by Bruce MacGregor and Ted Benson, published by Pruett Publishing Co., 3235 Prairie Ave., Boulder, CO 80301. 358 pages, 10½″x8½″, $30.00.

Subtitled "The Train They Called the California Zephyr," this account of one of America's most loved passenger trains, especially by the fans, is a fine book in spite of some shortcomings. Though the California Zephyr ran from Chicago to San Francisco, its greatest fame was in the west, crossing the Rockies and finishing with a bang through the Feather River Canyon. Operated by three railroads (Burlington, Rio Grande and Western Pacific), it was the WP's train to most people, and to understand the whys of the CZ, the authors give over the first part of the book to a general history of that railroad.

We found the writing a bit choppy at times, the chapter titles too cute, and some of the printing of less than good quality, but the subject is covered in depth and gives a full account of the beginnings of CZ, the great years of success, and finally the end of service when economics stopped what ordinary men couldn't.

The photography is excellent for the most part, with not only the work of the authors, but such lensmen as Richard Kindig, Richard Steinheimer, and some superb night views by Mel Patrick. The book is printed in a horizontal format, and to make it easier to keep on a book shelf, they have provided a handsome silver rigid sleeve. For any library that concerns itself with the passenger train and the great years of railroading. "Portrait of a Silver Lady" is a worthy addition. D.D.

Grand Central . . . the World's Greatest Railway Terminal by William D. Middleton, published by Golden West Books, P.O. Box 8136, San Marino, CA 91108. 160 pages, 8½″x11″, $17.95.

New York's Grand Central Terminal is more than just another big city train station, it is an experience. Intercity trains and commuter runs, as well as the New York subways all rush in and out on a maze of tracks that is all but bewildering. The massive concourse sees millions of commuters, hordes of youngsters on their way to summer camp each year, uncounted reunions and tearful goodbyes, yet the grand structure takes it all in stride. Many have tried to destroy it or rebuild it, but its friends are legion and they have managed to have the terminal designated a New York City Landmark. This final decision is still in the courts but the future looks bright.

Author Middleton presents the full story of Grand Central, not only from its completion in 1913, but from the very beginning of rail transportation in Manhattan. There are more than 200 illustrations, with both current and historical photos and drawings, as well as views showing the inner workings of the terminal. As usual, Middleton has done his research well and tells the story in a very readable style. G.A.

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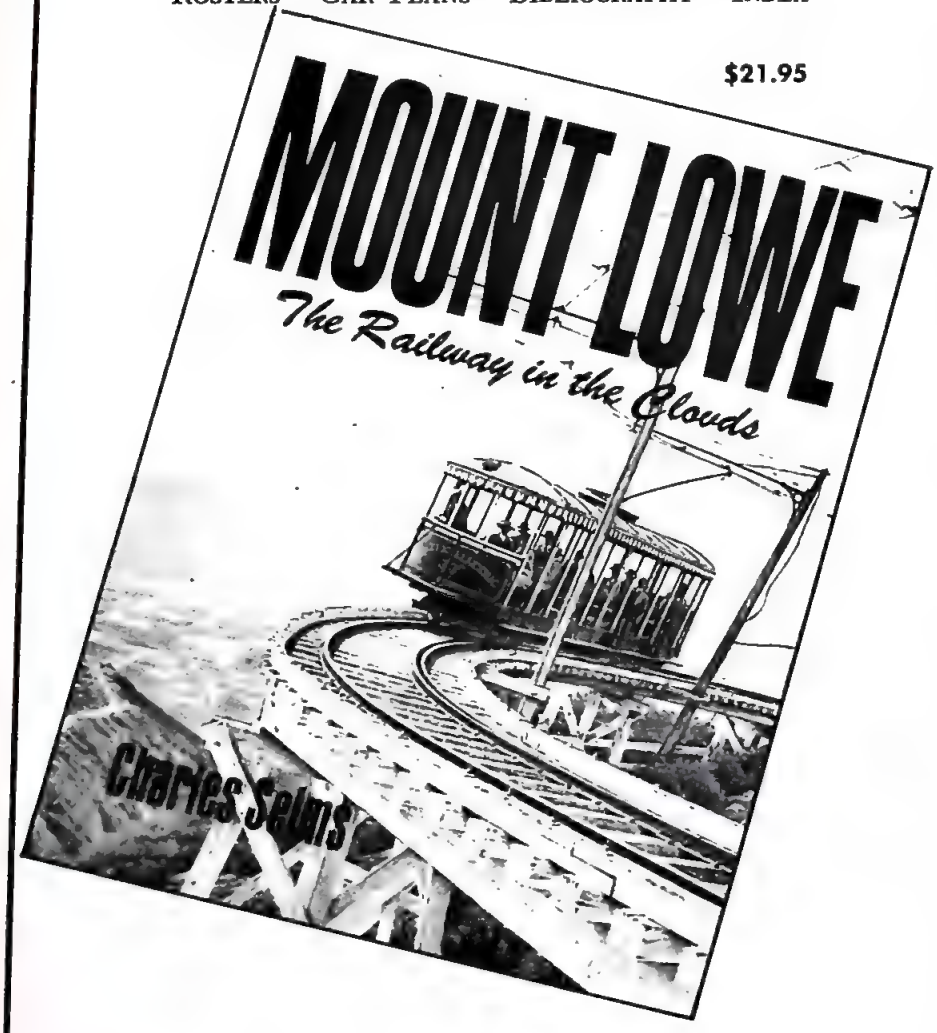

Southern California's Mount Lowe Railway, for nearly 40 years, lived up to its title "The Most Scenic Mountain Railway in the World." Its short trackage from Altadena to Alpine Tavern, rising over 3,130 feet in only 5.84 miles, constituted an engineering marvel in the midst of scenic grandeur, to which the story of its construction and operation lent color and interest.

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By Patrick C. Dorin

Grand Trunk Western Railroad by Patrick C. Dorin, published by Superior Publishing Co., 708 Sixth Ave., North, Seattle, WA 174 pages, 8½"x11", $14.95.

The Grand Trunk Western is a subsidiary of the Canadian National, operating in Michigan, through Indiana and terminating in Chicago. Though Canadian by ownership, the GTW is very American in its looks, equipment and operating procedures. To those familiar with the author's and the publisher's standard works, this book will be very familiar. A once over lightly text in a few pages covers the entire history of the railroad, while the majority of the book is filled with an odd collection of photos, mainly from company files.

And yet, for all its seeming lack of detail or thoroughness the book does present a nice overall view of what the GTW is all about. There are sections covering their steam locomotives, the change to diesels, the passenger service and even a chapter on the car ferry service in Wisconsin.

But we do wish that Superior would throw that old typewriter they use for locomotive rosters into Seattle Bay and spend a few more bucks to have this kind of material typeset. D.D.

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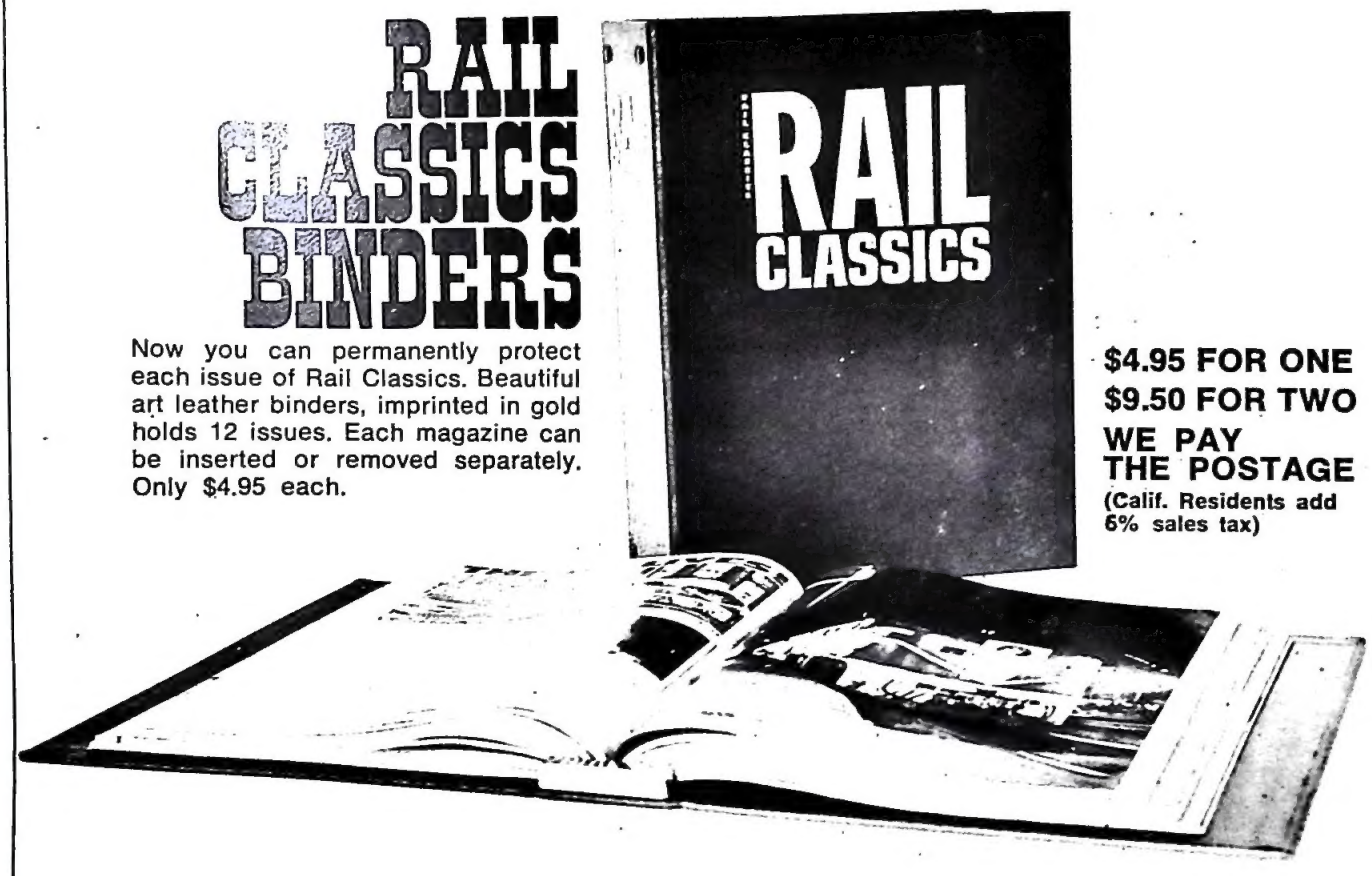

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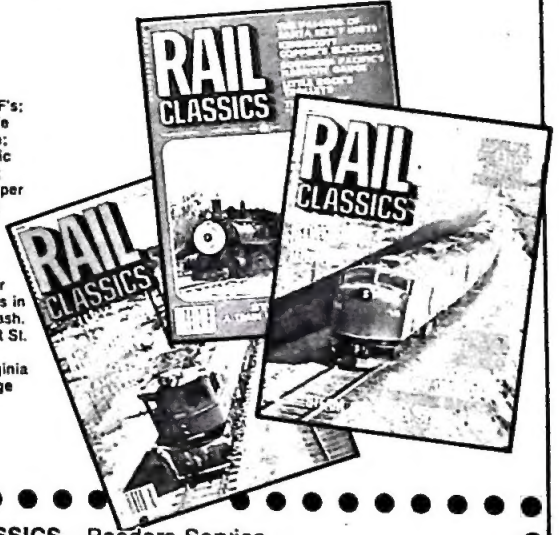

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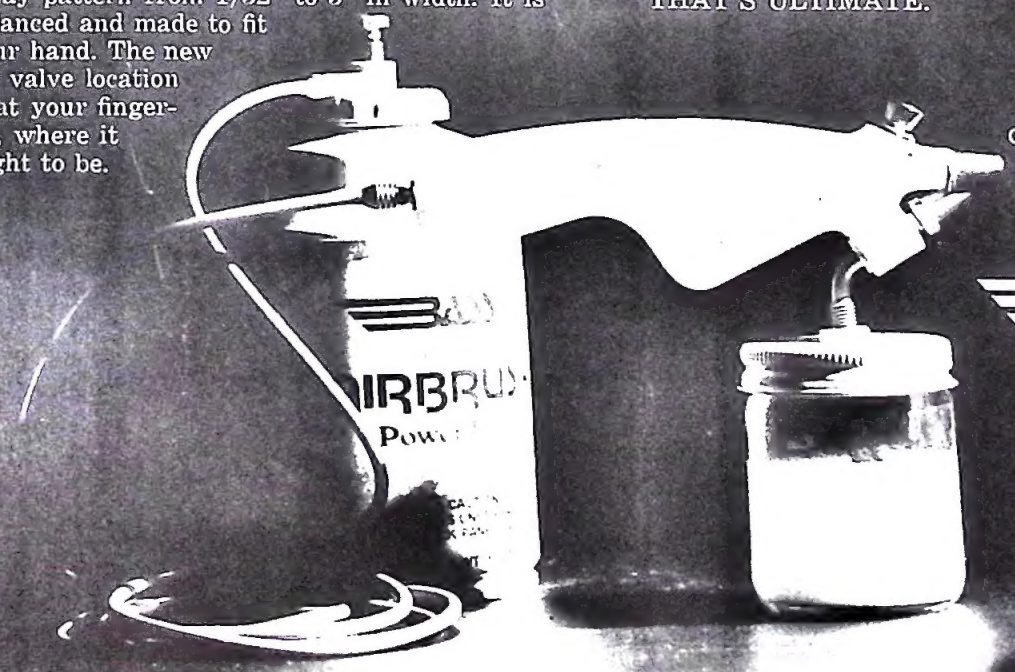

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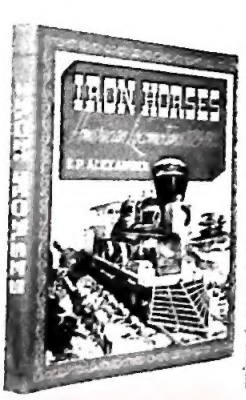

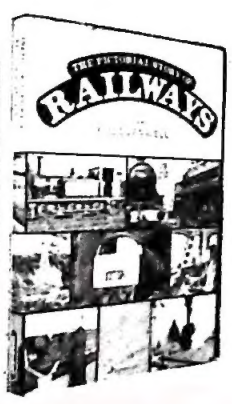

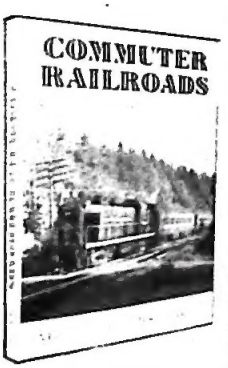

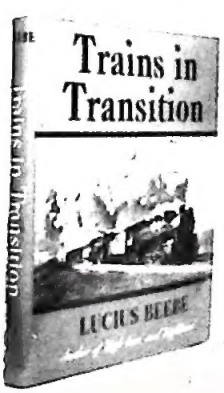

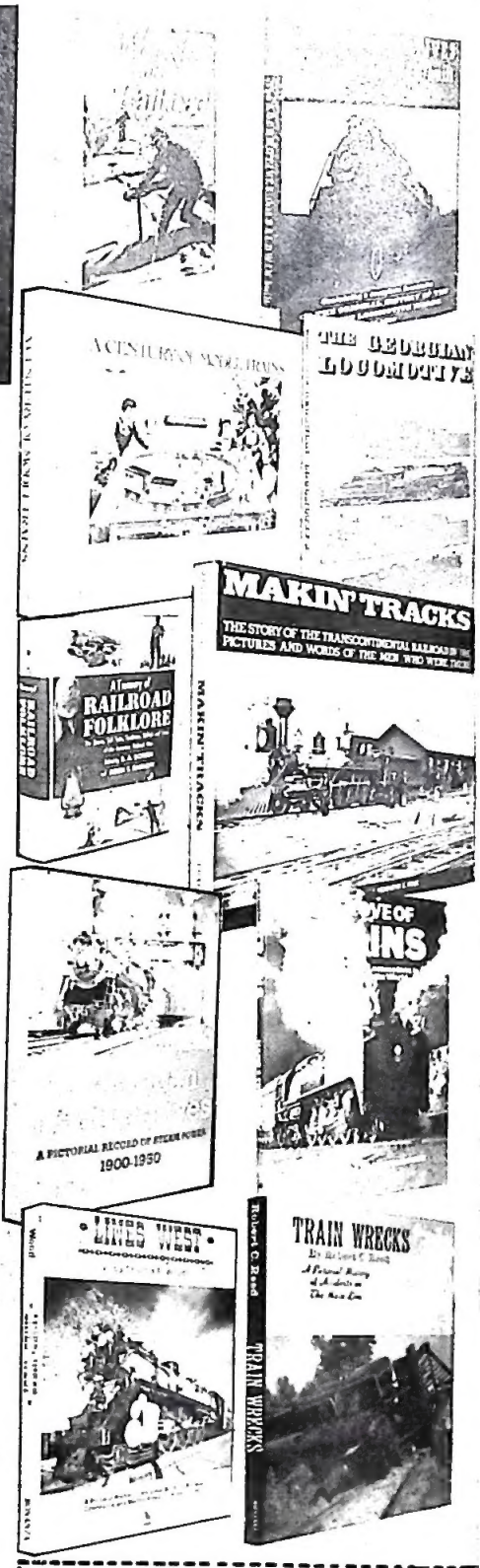

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